Vol. VIII JANUARY 1950 No. 1

THE HEALTH EDUCATION JOURNAL

	Page
RESHAPING CULTURE	1
NEW LIGHT ON ADOLESCENCE	2
ACUTE RHEUMATISM	6
THE SHAPING OF HUMAN NATURE	10
REMAINING ENVIRONMENTAL CHALLENGES TO HEALTH	16
SAFETY ON THE ROADS	21
MILESTONES IN MEDICINE—9	29
HEALTH EDUCATION IN THE WEST INDIES	31
THE ERADICATION OF TUBERCULOSIS	36
FILM NOTES	REVIEWS

CENTRAL COUNCIL FOR HEALTH EDUCATION

4 TIMES YEARLY . . . . . PRICE ONE SHILLING AND SIXPENCE

THE CENTRAL COUNCIL FOR HEALTH EDUCATION

Founded 1927 Incorporated 1936

OFFICERS

President : The Rt. Hon. Lord Woolton, P.C., C.H., D.L., LL.D.

Vice-Presidents : Sir W. Allen Daley, M.D., F.R.C.P., K.H.P.
Charles Hill, M.A., M.D., LL.D., D.P.H.

Chairman : E. K. Macdonald, O.B.E., M.D., D.P.H.

Vice-Chairman :
W. A. Bullough, C.B.E., M.Sc., M.B., Ch.B., D.P.H.

Honorary Treasurer : Robert Forgan, M.C., M.A., M.D., D.P.H.

Liaison Officer, Society of Medical Officers of Health :
G. L. C. Elliston, M.A.

Medical Adviser and Secretary :
Robert Sutherland, M.D., D.P.H.

The Central Council for Health Education is maintained by the Ministry of Health, the Ministry of Health and Local Government of Northern Ireland and Local Authorities in England and Wales and Northern Ireland to advise and assist Local Authorities in their health education work.

Its headquarters are in Tavistock House, Tavistock Square, W.C.1, and it has an Area Office with an Area Representative in Belfast.

The Central Council publishes the *Health Education Journal*, the *Nutrition Bulletin* and a wide range of health education material. Every two months it provides, free of charge to all Local Health Authorities who desire to use it, a new three-dimensional topic for the exhibition stand that it has supplied to them on free and indefinite loan. And every few months it provides, free of charge at a dozen university centres, two-day courses in health education for the members of various professional groups nominated by Local Authorities.

Health Education in Scotland

The Secretary of State for Scotland recognises the Scottish Council for Health Education as the responsible body for assisting Local Authorities in Scotland, and inquiries concerning health education in Scotland should be made to the Secretary and Treasurer, The Scottish Council for Health Education, 3, Castle Street, Edinburgh, 2.

The
HEALTH EDUCATION
JOURNAL
A Quarterly for all who are interested in Health

VOL. VIII. JANUARY 1950 No. 1

RESHAPING CULTURE

THE shape of man's body, the nature of his illnesses, the length of his life are all in part the results of the working of physical environment upon heredity. Equally significant, however, is the culture in which he is reared : the accumulated inheritance of skills, knowledge, customs, beliefs, values, that has been built up by his forbears, and adopted by his group. These greatly modify his physical environment. They also influence such things as his sleeping and feeding habits, his exercise, his recreation, his hygienic practices and his clothing. They determine, too, the health and social services available to him. Most important of all they establish the goals, values, attitudes and concepts that will decide his reaction to every situation he meets in life.

It is from his culture—and especially from the conditioning which he receives in his earliest years—that he forms his picture of himself and his role in life ; his pictures of others and their roles ; his scale of values, including his concepts of the purpose of life, and of what constitutes success, goodness, beauty, truth ; and his attitudes towards health, disease, doctors, patent medicines, health and social services, friendship, marriage, family life, the state, religion, public opinion, prestige, efficiency, occupation, money, leisure. And it is upon these pictures, values, concepts and attitudes, acting on his innate trends, that will largely depend his emotional—and therefore his total—health.

Since, in the past, so little attention has been paid to this relationship between culture and health, it is not surprising that emotional maladjustments and psychosomatic disorders are as widespread as we now know them to be. Hence the need, implied by Dr. Seeley (page 10), to look critically at the culture we are imposing upon our children and to reshape it the better to meet their emotional needs and to advance the wellbeing of the individual, the group and all mankind.

Hlth. Educ. J., 1950, 8, 2—5

NEW LIGHT ON ADOLESCENCE

By C. M. Fleming, *Reader in Education, University of London Institute of Education.*

Sixty to seventy years ago interpretations and descriptions of human behaviour were in terms of quasi-philosophic theories. Forty to fifty years ago they were based on the observation of individuals in laboratories or consulting rooms. In more recent decades they have come to be dependent on the findings obtained from the study of human beings in action, in the groupings of home, school, industry or city.

At this point the reader may wonder what such generalisations have to do with the matter in hand. Generalisations are admittedly dangerous, but they are also a potent aid to understanding ; and these three generalisations serve not only as a reminder of the course taken by psychology in the last hundred years, but as a pointer to the reasons for the discrepancies between the old and the new interpretation of adolescent behaviour and a key to the persistent survival of certain of the tales which were formerly told.

" What else could you expect ? "
" Boys and girls are quite different from adults."
" It's adolescence. Nothing can be done about it."
" They must sow their wild oats."
" Boys and girls are not what they used to be."
" It's that modern education that is to blame."
" You can never tell how they will develop."
" She's growing fast, poor dear."
" Of course, he'll never be any use at that."
" He's emotionally upset. An adolescent, you know."
" They're just beginning to be able to use their reason."
" None of us can understand them."
" Boys and girls are better apart at that age."
" Naturally they've no use for their parents."

And so the talk goes on where parents and teachers meet and the viewpoint of the 1890's is expressed along with the viewpoint of the 1910's and that of the 1940's.

The Nineteenth Century View

Philosophic fiction such as that of Rousseau presented a picture of clearly demarcated stages of growth with the flowering of different faculties at different ages ; and the circumstances of his time justified a plea for attention to the respects in which children may live a life of their own quite apart from the community and quite different from that of adults. His nineteenth century followers (made articulate by Stanley Hall) perpetuated his theories and offered eloquent advocacy for the segregated education of boys and girls, for the distinctiveness of childhood, the inevitable misunderstanding of adults and the suddenness of onset of emotional turmoil and intellectual ferment along with the maturing of a sexual instinct at a fairly clearly defined age in boys (and about two years earlier in girls).

Stanley Hall in two volumes of eloquent writing at the turn of the century (1905) repeated the interpretation of Rousseau's *Emile* but added to the eloquence of the novelist the first fruits of the psychometric studies of the 1890's and the 1900's. To an extent which is now surprising, however, he was concerned only with age averages and sex averages obtained from results of testing individuals and groups of individuals at different ages and, since he neglected the evidence of the wide overlapping of groups which accompanied certain apparent differences of average scores, he did little more than perpetuate the assumptions of the eighteenth and nineteenth centuries that at adolescence there was a sudden transition—a change in intellectual functioning, a flowering of artistic and religious sensitivity, an uprising of emotion and an inevitable moodiness, rebellion and unhappiness.

At a slightly later date, but within the same intellectual framework, came the dynamic and instinctivistic interpretations rendered potent by McDougall and Freud with their corroborative expectation of the inevitability of the appearance of a specified pattern of irresistible instincts and of the emergence of intellectual modifications in consequence of the gratification or sublimation of these instincts.

Much popular discussion of the reasons for adolescents behaving as they do is still in terms made familiar by the eloquence of these writers. More recent evidence has, however, rendered many of their assumptions suspect.

The Modern View

This more recent evidence is from three main sources: from long-term studies of individuals in their social setting over a period of eight to twelve to twenty years, from anthropological records of the behaviour of people of the same physiological maturity in different cultural patterns,

and from clinical records of the outcome of remedial treatment given to backward, delinquent or maladjusted boys and girls. This evidence has been accumulating steadily over the last thirty years. Only recently has it been reported in sufficient quantity to justify its interpretation and the tentative application of its findings to the criticism of accepted procedures at home, in school or in industry.

Expressed very briefly, these findings are to the effect that growth is gradual rather than saltatory, that at any age the differences are very slight from day to day ; that development is variable and disharmonious, that each individual follows his own pattern in relation to the average of his group ; that the differences within each sex group are more remarkable than the differences between boys and girls ; that all human beings are bisexual to degrees which differ from individual to individual and from year to year ; that human beings are from the beginning social (though not necessarily sociable) in nature, members of groups and modifiable in consequence of such membership ; that the patterns of behaviour found in one cultural group may differ very markedly from those observable in another and that therefore there is little reason to believe that generalisations based on the personal relationships of Viennese or Californian homes at the turn of the century have universal applicability ; that what is commonly called intelligence continues to develop to a later age than was supposed and that human functioning is less determined by biological maturing than it was thought to be in the early decades of the twentieth century.

These findings differ very markedly from earlier theories both in content and in origin. They are in perpetual process of confirmation by the reported studies of physiologists (who emphasise both the extent and the complexity of individual differences), of endocrinologists (who tell of the subtleties of interplay in glandular, chemical and mental functioning), of psychiatrists (who have passed beyond the study of psycho-neurotic patients as self-contained problems) and of psychologists (who have come to lay stronger stress on the modifiability of human behaviour and its dependence on family and social conditions).

There is now, therefore, substantial reason to believe that children and adolescents are less inevitably different from adults than was supposed—either in interests, in attitudes or in intellectual functioning. The type of thinking employed seems related both to the age of the thinker and to the circumstances which call it forth. (Adults may be as illogical, as blundering and as ego-centric as any child.) Physical development cannot be shown to be highly related to mental development. Boys and girls do not in every culture show large or consistent differences in rate of maturing—in any specifiable direction. There seems no reason to

suppose that the sowing of wild oats, or the appearance of moodiness, negativism, or rebellion are inevitable concomitants of a certain stage of growth. There is evidence to indicate that such awkwardnesses and maladjustment are the consequence of certain sorts of mishandling and appear only when opportunities are denied for the satisfaction of the basic human need to receive appreciation and to make some responsible contribution to the welfare of an intimate group.

Education

Co-education rather than segregation is supported both by similarity of age of average genital maturing of girls and boys, by the wide overlapping from one group to another, by the personal idiosyncracies of date and rate of physical and emotional development and by the greater ease of social maturity experienced in a co-educational group where opportunities are provided for the mutual observation, tentative approaches and exploratory co-operation of groups of boys and girls who share the common loyalties of school and playground or club-house.

Flexibility and generosity of educational provision for all also finds justification in the absence of evidence of fixity of relative status—of invariable ' constancy ' of intelligence quotient or ' unmodifiability ' of achievement. There is no reason to believe that final failure is always a sequel to initial defeat. There are rather grounds for hope that within the limits set by inheritance and innate endowment there is a greater probability of success for present weaklings than was believed by those who had not read the records of long-term studies of quite mediocre boys and girls in their reactions to the educative social influences of homes or schools or workshops.

Adolescents are educable. Adolescents are worth educating. Things are not entirely as they were—though things may yet be better than they are.

BIOGRAPHICAL NOTE

C. M. FLEMING, M.A., Ed.B., Ph.D.—Reader in Education, University of London Institute of Education. One time teacher of English ; formerly Lecturer on Methods of Teaching in Jordanhill Training College, Psychologist at Glasgow University Educational Clinic and Lecturer on Educational Psychology in the University of London. Author of *The Social Psychology of Education, Research and the Basic Curriculum*, and *Adolescence*.

Hlth. Educ. J., 1950, 8, 6—9

ACUTE RHEUMATISM

By C. Bruce Perry, M.D., F.R.C.P.,
Department of Medicine, University of Bristol.

Acute rheumatism or rheumatic fever is perhaps unfortunate in its names for these suggest a disease inevitably associated with fever and pain in or around joints and which runs an acute course. Yet none of these implications are necessarily correct. Essentially a disease of childhood, it may occur with a varied clinical picture. The three main manifestations are arthritis affecting a number of joints (from which the disease is named), an inflammation of the heart (or carditis), and St. Vitus' dance (or chorea). Any of these three may occur alone or together, although chorea and arthritis are rarely combined ; and all three may be associated with two much less common manifestations, subcutaneous nodules and a peculiar rash. The arthritis is accompanied by a moderate degree of fever but chorea and carditis may occur and progress without this. The arthritis again is a fairly acute episode but the much more important carditis may run a smouldering course of many months' duration. With the exception of the carditis, which leads to permanent damage to all parts of the heart, the clinical manifestations of acute rheumatism disappear completely and leave no residual damage. The significance of acute rheumatism to the community is the fact that it is a very important cause of chronic heart disease, the characteristic feature of which is the occurrence of scarring and deformity of the valves of the heart. For practical purposes all cases of what was once commonly called V.D.H. or valvular heart disease are actually examples of rheumatic heart disease.

The Extent of the Problem

As the disease is not notifiable it is difficult to discover accurately the exact incidence. We do know that practically all deaths from heart disease under the age of 40 are due to acute rheumatism. From the Registrar General's returns it has been calculated that the annual death rate in England and Wales is from 14,000 to 24,000. It accounts for nearly 40 per cent of heart disease treated in general hospitals. In 1938 it was considered that 2.6 per cent of the child population of London were suffering, or had suffered, from acute rheumatism, although since then there is evidence that the incidence has fallen. From the figures of recruits rejected for military service in the last war Parkinson estimates that there are at least 200,000 persons between the ages of 18 and 41 in Great Britain suffering from rheumatic heart disease. Further, the

problem is rather more serious than a consideration of these figures alone would suggest. Rheumatic heart disease starting in childhood gives rise to ill health, and finally death at a relatively young age period and at a time when the individual should be in the prime of his or her life and of the greatest value to the community as a whole.

Individual Factors

The causation of this important disease is still obscure but certain broad facts are clear. As has been mentioned, the acute phase of the disease occurs mainly in childhood and the greatest incidence is found in children of school age (5–15 years). Once a child has had an attack of acute rheumatism in any of its forms he or she is very likely to have a recurrence, especially within the next few years. In fact, far from developing an immunity, they seem to become predisposed to another attack. Although the disease presents many of the features of an infective process no specific infecting agent has actually been found. From time to time claims have been made that various organisms, and more recently a virus, are to blame, but these have not been substantiated. There is a close relationship between acute rheumatism and infection with the haemolytic streptococcus, in that it is not uncommon to find that an attack or relapse of acute rheumatism follows an upper respiratory infection by the haemolytic streptococcus after an interval of from 10 to 30 days. During this so called ' silent ' interval there is nothing obvious to indicate that a rheumatic attack is developing. Occasionally in schools, training ships or other centres where young people are brought together epidemics of acute rheumatism occur, and here the same type of relationship is observed, the outbreak being preceded by an epidemic of sore throats due to the haemolytic streptococcus. Further, scarlet fever which is, of course, due to infection with this type of organism may similarly be followed by the development of acute rheumatism during convalescence. Finally, examination of the blood of the majority of patients in an acute attack of rheumatic fever reveals evidence of a recent streptococcal infection even in those with no such history. It is well known that upper respiratory infections due to the haemolytic streptococcus are extremely common in temperate climates in all classes of society, yet it is only in the occasional case that this is followed by the development of an obvious attack of acute rheumatism. However, recent detailed studies of young men convalescent from haemolytic streptococcal sore throats goes to suggest that the difference between the patient who makes an apparently uneventful recovery and the case of subsequent acute rheumatism is one of degree rather than kind. It was found on special investigation that many of the former group revealed a raised sedimentation rate, vague ill health

and a transient alteration in the electrocardiogram at that phase of convalescence when acute rheumatism is likely to occur.

Social Factors

There is another important feature about the aetiology of acute rheumatism and that is the striking social incidence which is even more marked than that of tuberculosis. The disease rarely occurs in the better off members of society and reaches its maximum severity amongst the poor of our large towns. Much speculation has taken place as to the meaning of this phenomenon. Its relationship to poverty naturally shows a clear correlation with overcrowding and it has been suggested that this in itself is the important factor leading to recurrent and repeated infection. There is no doubt that the disease tends to occur more frequently in some families than others. To some this indicates an inherited predisposition, others however see in this family incidence further evidence of the importance of environment in its production. It is obvious that families tend to live under the same conditions as well as inherit a similar constitution. Recently an attempt has been made, with some success, to show that this increased family incidence only holds good as long as the individual member remains within the family unit. Despite the popular conception that rheumatism is closely related to damp, no evidence of any relationship between damp housing and the incidence of acute rheumatism has been found. Neither did the removal of families from slum dwellings to new housing estates before the recent war result in any marked decrease in the incidence of the disease. Naturally with this peculiar social incidence the question of a nutritional factor has been considered, but no direct evidence for a nutritional deficiency has been found. However, it has been claimed in the United States that if the diet of rheumatic children is reinforced by first class protein and ' natural ' food such as two eggs a day, or an even more generous allowance of extra milk, meat, fats, and fresh fruit, the incidence of rheumatic relapses is very materially reduced. The deleterious influence of poor environment seems to last for some time, as in a training ship where an epidemic of acute rheumatism occurred it was noted that there was a higher incidence in boys recruited from depressed areas.

Prevention

While we do not know the actual cause of acute rheumatism it is obvious that its prevention might be tackled from two points of view. From what has been said it would appear that if haemolytic streptococcal infection could be prevented so would acute rheumatism. It is quite impossible from our present knowledge to prevent these infections in the

general community but it is possible to reduce, if not to prevent them, in a selected community by the continuous administration of sulphonamide drugs. It has been shown that if children who have suffered from rheumatic fever are treated in this way the incidence of rheumatic relapses can be very materially reduced. However, the continued administration of these drugs is not without its dangers, and it is doubtful if the method will ever be satisfactory for general use. The other approach is to alter the environmental factors which make the child susceptible to the disease. This is occurring in the natural course of events as the general standard of living rises. Coincidentally with this rise in the standard of living there has been a marked decrease in the incidence and severity of acute rheumatism and rheumatic heart disease, which has been particularly striking in the last 20 years. It is only right to add that during the same period there has been a decrease in the severity of streptococcal infection in general. As has been mentioned, an attempt to alter the rheumatic child's environment by supplementing the diet has led to a decrease in the incidence of relapses similar to that seen following the administration of sulphonamides.

Treatment

As far as the treatment of the affected child is concerned the all-important things are care of the heart by rest in bed and correction of the environment by treatment under optimum conditions of food and housing. The treatment by rest must be continued for a long time and until the rheumatic process is completely at an end. Such long bed rest is very irksome for a child unless adequate occupation, preferably in the form of school work, can be provided. This necessitates treatment in a properly equipped hospital school. With such treatment the majority of cases recover with a minimal or no cardiac lesion and on discharge are able to return to a normal school and lead a full school life. It is important, however, that they should be kept under regular medical supervision, so that any rheumatic relapse may be recognised and treated as soon as possible, and so that if their heart has been affected they may ultimately be trained for and advised on suitable occupations.

BIOGRAPHICAL NOTE

CHARLES BRUCE PERRY, M.D., F.R.C.P.—Professor of Medicine and Dean of the Faculty of Medicine, University of Bristol, and Physician to the United Bristol Hospital and to Winford Orthopaedic Hospital. Bradshaw Lecturer, Royal College of Physicians, 1944. Author of various papers on acute rheumatism and rheumatic heart disease in childhood, bacterial endocarditis and erythema nodosum.

Hlth. Educ. J., 1950, 8, 10—15

THE SHAPING OF HUMAN NATURE*

By JOHN R. SEELEY, *Executive Officer, The National Committee for Mental Hygiene (Canada).*

WE are faced, almost the world over, with a sorry spectacle of massed hostility and hate. Group is set against group. Man is set against man. And man is set against himself. This is a problem upon whose solution may well turn the survival of mankind.

Man is not born human, he becomes human—in society. All his distinctively human characteristics: the 'gift' of speech, the ability to 'reason', self-respect, self-control, his ability to put himself in the place of others, to sympathise, to love or hate in any human sense—all these, and more, are mediated to him by the society into which he is born, and they cannot be had without it. The supporting evidence for such a point of view comes not only from the instances of feral children—children not raised in a human society—and from the instances of children highly isolated in their upbringing, but, more weightily from careful observation of the process of growing up in a number of societies. In short, in the view of the social psychologist, the little biological organism, the little mass of reactive protoplasm, the little animal that is only potentially human gets his human nature in and from the society into which he is born.

Out of the "buzzing, blooming confusion" that is the infant's world there emerges in the process of growing up in a human society, a more or less definitely structured and ordered view of the physical world, of the social world, and, most important, of that most marvellous world that is the person's self.

At the very beginning, the intimate family begins to pick out of the mass of his random activities those that have significance for them. By their responses to those so picked out, they either stamp those activities in or stamp them out (or permit them to suffer extinction by default). Out of the vague, random and initially aimless host of syllables and noises that the infant provides, the parents pick out those which have some reasonable similarity—at least to them, if not to the family friends—to the first terms that the child will learn in that culture. (In ours, evidently, any vowel or grunt connected with 'M' will do as a first step towards 'Mother'.)

By behaviour that is essentially similar; by behaviour that 'defines

* From an address delivered at McGill University in November, 1948.

the situation ' for the child ; by the response to a smile ; by an activity such as suckling connected with one kind of cry and not with another ; by providing the child with a stable, systematic set of responses to his unordered activities, he learns, largely by implication, the ' meaning ' of these activities. And without such a system of responses, they will remain essentially meaningless, which is to say, sub-human. It is particularly to be noted that the meaning not only of *his* activities, but also of words like ' Mother ', ' Father ', ' Brother ' in a sense that is not given in mere animal experience, emerge together. That Mummy ceases to be merely a pattern of light, a pleasant smell and a warm feeling, depends on her coming into communication with the child as a *person*.

Definition of Self

In the course of time, and with the biology of the matter providing the necessary, but not the sufficient conditions, the child comes to the discovery of other persons, as persons, and himself as a person also. He comes first to these discoveries (when he is biologically and socially ready for them) essentially by way of the play-activities that characterise every culture. In the course of his play, and doing at first nothing more than re-creating his previous experience with his family, he begins to try out various of the ordered systems of activity—the roles—of those immediately around him. Anyone who has seen a small child playing with a doll, or a favourite rabbit, or a bear, must have been quite struck with the essential resemblance of his play to the normal course of interaction between members of the family—at least as he sees them. A child from a family much given to nagging, to violence or to moralising about ' naughtiness ' will tend to put an equal emphasis on these activities into its play.

What is important about this play, from the viewpoint of our discussion is not, however the content that is involved, but the form or essential nature of the process. It is in this process, and only in this process, that the child by taking in his imagination the role of others—generally, the members of his immediate family—gets a picture of how he looks, what he ' means ' to others. By taking his Mother's attitude in imagination to his doll or to himself, he not only enters into and begins to ' understand ' his mother, but, in the process, gets a notion of what he, himself, is. For the first time, in any intelligible sense, he has a ' self '—or, rather, since the definitions that he gets from various members of the family may be quite conflicting, he has a number of selves—partly actual, and partly potential.

For quite some time there tends to be merely an increase in the number of such selves that the child has, rather than any evident organisation

among them. He may think of himself at one moment as a 'baby'; at the next moment as 'Mummy's little man'; and, at the next, as a bold and dauntless knight, fireman, cowboy or pirate chief, if the society provides models of these for him to pattern himself upon. Much of the instability of childish conduct probably depends on this instability or lability of his notion of himself, rather than on many of the more esoteric grounds upon which it has been commonly supposed to rest.

In the normal course of events, however, since only some of these roles with their corresponding self-definitions are held up to the child with any constancy, and others of them are either ignored or more or less radically discounted and disvalued, the child tends to emerge with a relatively small bundle of roles and selves—or self-conceptions—among which he tends to wander rather loosely according to the exigencies of time, company and place. He is not so likely now, perhaps, to think of and define himself as a rabbit one moment, and 'the boss of the whole world' the next. But he is still quite likely to think of himself as a 'tough guy' at one instant—and act accordingly—and to feel that he is a poor, defenceless little creature much in need of mothering when the consequences of being a tough guy are visited upon him.

It is quite conceivable—and indeed it sometimes happens—that an arrest of development should take place at this stage. We all know people who have nothing more than a series of selves, none of which appears any more important and dear to them than any other. We even know people arrested in the previous stage, where they still depend for their sense of self on whatever company they happen immediately to have. They have what Cooley has called "looking-glass selves", i.e., selves which are purely and simply a function of whatever image of them is held up to them by their companions.

Organisation of Self

But again, in the normal course of events, and as the child is caught up and implicated in the *organised* activities of his society, the various selves that he has had in imagination and actualised in conduct, come under the necessity of being ordered and organised.

It is only in virtue of this achievement that he can participate in organised activities with others; is rendered independent of the passing, local and temporary judgment of others; becomes in some sense autonomous; and is, in the only intelligible meaning of the term, a 'free' and hence, a moral agent.

For the organisation that is achieved is not limited to each of the *separate* organised activities of the society into which he is born—activities in connection with the economy, the government or the manipulation

or placation of the spirit world. To the degree that these are themselves inter-related, that is to say, organised parts of his society, the ' generalised other ' which it is possible and necessary for him to take, and which he does take (as he becomes implicated in the total organised activity), is ever more and more general. In a society with a written history, like our own, Aristotle may be his companion together with Dale Carnegie and St. Francis—or St. Marx—may be " nearer to him than breathing, closer than hands or feet ".

It should not be necessary to add, I suppose, that it is only this capacity in socialised man to act in a social relationship with himself—to talk to himself, to take an attitude to himself, to ' stimulate ' himself just as he would another person—that permits him to *think* at all or to bring his own conduct under control. Out of the welter of ' stimuli ', external and internal, that beset him from moment to moment, out of the disordered but constantly welling impulses that are his minute-to-minute experience, he must select those objects to which he will pay attention: those which are to be *permitted* to be ' stimuli ' for him, and those impulses which are compatible with his pattern of activity and intent. Man has been referred to as a political animal. He has been spoken of as a reasoning animal, as a playing animal, and as a making or manufacturing animal. He is all those things. But, centrally and *a fortiori*, he is a career-making animal—the only animal that spins forward in imagination and then follows in conduct a lifeline which he builds as he goes. Here is no simple ' chain of reflexes ' or stimulus-response scheme, but a caterpillar-tread-like laying down of the road as one goes, a virtual creation of the ' stimuli ' to which one will be responsive—the most important stimuli being those that one gives to oneself.

If what has been said so far is true—or a reasonable facsimile of the world of events—then it is at once apparent that without a clearly-defined, well-organised self, compatible in all its aspects, conduct cannot be coherent, orderly or self-satisfying. Lack of clarity will render issues fuzzy and decision bumbling ; lack of organisation will render thinking disjointed and action uncertain or inept ; and lack of compatibility will render the inner life conflictful, and the outer self-defeating and frustrating. And self-frustration leads to the hate of oneself, the hate of others, or both.

Co-ordination in Society

The second question to be answered is : how is it that highly individual lines of action can be so concerted or co-ordinated that *social* or corporate action is possible at all?

Such joint action is, in the run of cases, possible only because the

individuals concerned are not so totally unique and individual as has been sometimes supposed. Convergence of individual lines of action may sometimes occur by chance, or on the basis of a common biological make-up. Two cricket fans will probably dodge a flying ball (if they cannot catch it) by simple reflex action, much more simply than they would if they sat down, analysed the situation and came to the agreement " You duck right and I'll duck left ". But ordinarily, a common animal nature would provide but ill for concerted action as between human beings.

Co-operation—antagonistic or other—between human beings is ordinarily possible only on the basis of a shared world of common meanings. To behave ' properly ' in a professor-student relationship there must be as between professor and student a common understanding of what a professor is—what he is and is not expected to do ; and what a student is —what he is and what he is not expected to do ; and what is to be the relation between them. This understanding runs from gross details, like the spatial distribution of the two in reference to a platform, through less gross matters like the respective amounts of material goods that each is entitled to possess himself of, right down to the very finest of refinements in respect to the kind of deference-behaviour that each is expected to show —or not show—to the other. Only if all these understandings are shared pretty well by all participants can the organised system of activities which we call a University go on.

These understandings, these common definitions of situations, these systems of reciprocal rights and obligations, these shared meanings, these mutual expectations are what constitute an aggregate of human animals into a society—or community—and what make its individuals *members* of that society. That such common understandings and definitions come about neither by chance alone, nor because of anything that can be said about the biological nature of man alone, is almost too trite to state. The system of understandings is communicated to the infant in the way I have already described, and hence mind, self and society are what the philosophers call *co-emergents*—they emerge together—in the process that may be called the socialisation of the child.

It must be clear, too, that the amount of inter-personal harmony, of peace, order and good government in any society is a function of the identity of understanding, on the part of all the people who may be implicated in any situation. It will be a source of conflict, and it often is, if the professor's view of what is a student, and the student's view of what is a student, are, in any important respects, dissimilar. It will be even more productive of conflict if the administration's view, and the student's view, and the professor's view of what is a professor, bear nothing but a fleeting and tentative resemblance.

It appears, therefore, that if the individual is not constantly to frustrate himself, to trip, as it were, constantly over his own psychological feet, he must be possessed of a self that is clearly defined, well-organised and self-compatible ; and if he is not to be constantly frustrated by, and to frustrate the other persons with whom he is in inter-action, both he and they must share broadly a common system of understandings and expectations and definitions.

Unfortunately, however, in view of the very nature of our society, it is inordinately difficult to achieve either, let alone both, of these related conditions. This problem will be examined in a second article.

THE NATIONAL BABY WELFARE COUNCIL

Patron, HER MAJESTY QUEEN MARY

President, THE PRIME MINISTER

Chairman, THE LORD FORRESTER

The National Baby Welfare Council was founded in 1917 under the name of the National Baby *Week* Council. Over a period of years the Council's work expanded in so many directions that the name National Baby Week Council implied too narrow an idea of the Council's activities ; the name was, therefore, changed in 1939 to National Baby Welfare Council.

The objects of the Council are to promote maternal and child welfare by every suitable means of education and propaganda ; to interest the individual parent (mother and father) in studying and applying the best methods of parentcraft in all its aspects ; to interest individual citizens in all matters concerning maternal and child welfare ; to achieve a close relationship, by affiliation or otherwise, with those organisations engaged or interested in family health and welfare.

The activities of the Council include the preparation and distribution of publications ; the arrangement of lectures, film displays, exhibitions, competitions and broadcast talks ; the annual celebration of National Baby Week ; general education in maternity and child welfare matters, the issue of 'Mother and Child', a monthly journal for the maternity and child welfare worker ; the supply of authoritative information and articles to the Press ; the collection of statistics and reports bearing on maternal and child health and welfare.

The Council's services are extended overseas by the provision of instructional publications in connection with mothers and children, through correspondents throughout the world ; and by the holding of competitions throughout the British Commonwealth and Empire.

The Council is composed of representatives of local authorities, local voluntary committees, and affiliated societies, as well as individual subscribers and donors. The business of the Council is conducted by an Executive Committee consisting of 30 elected and 15 co-opted members.

Headquarters : 31 Gloucester Place, London, W.1. (Telephone : Welbeck 6857.)

The eighth in a series of notes on major voluntary organisations that undertake health education work.

Hlth. Educ. J., 1950, 8, 16—20

REMAINING ENVIRONMENTAL CHALLENGES TO HEALTH

By A. Leslie Banks, M.D., F.R.C.P., D.P.H., *Barrister at Law, Professor of Human Ecology, University of Cambridge.*

The restoration of the sick to health has been the aim of physicians since the beginning of time. The prevention of disease, by measures designed to protect or improve the environment in which man lives, is of relatively modern development. That environment is changing, and it is worthy of consideration whether the dangers which menace it are changing also.

It is a hundred years since Simon presented his first Annual Report to the City of London. The date was the 6th November, 1849, and the comparison between that report and the reports of his successors in this year 1949 reveals striking contrasts and still more striking similarities. The contrasts lie mainly in the form and character of the reports. Simon's reports were, in fact, essays on the dangers to the public health as seen by personal observation. Written in his leisurely and masterly style they read as well today as when they were first written.

In his City of London Reports, Simon took for his main headings such matters as house drainage, water supply, the social condition of the poor, houses unfit for habitation and offensive and injurious trades. His campaign against the evils of burial grounds and against cholera as a filth disease are past history, but it is possible that we may yet need to look again at his comments on vaccination. Certainly his essay on *A Ministry of Health* dated May 15th, 1854, which formed the preface to the volume of reprinted City Reports, is appropriate to the present moment. Simon was quite remarkable in some of his forecasts and it is in his footnotes, giving apparently secondary thoughts in his mind, that some of his true greatness is seen. Thus as a footnote to one of his reports, he says, " To the philosophical thinker there would seem to exist no important difficulty which should prevent the collective warming of many houses in a district by the distribution of heat from a central furnace—perhaps even so, that each house might receive its *ad libitum* share of ventilation with warmed air. Ingenuity and enterprise, in this country, have accomplished far more arduous tasks ; and I little doubt that our next successors will have heat pipes laid on to their houses, with absence of smoke and immense economy of fuel, on some such general organisation as we now enjoy for gas lighting and water supply ". That footnote was made in 1854. Experiments on these lines are now being put into practice.

There are, of course, many matters dealt with by the Medical Officer of Health today that were left untouched by Sir John Simon. Even so, the headings to his report form a useful starting point in discussing the remaining environmental challenges to health.

Drainage

Take first the question of house drainage. He attacked with all the power of his pen the dangers of cesspools, inadequate sewerage and river pollution. He had a special word for the nuisance from the river docks. In most urban areas today, his criticisms are no longer valid, but in rural areas and some of our small towns, his comments apply. Thus the Medical Officer of Health for a rural district, with several large villages, commented in 1947 that a proposed drainage and sewerage scheme when it appears will have dealt " with what is in the aggregate the largest insanitary area in the rural district. There are an unknown number of old sewers in these villages which, from sources obvious and otherwise, find their way to the streams, there to discharge their considerable content of sewage perhaps partially treated but more frequently untreated ". Almost every Medical Officer of Health of a rural district has similar comments to make and pleads for the abolition of the night soil cart and the proper drainage and sewerage of his area.

When it comes to river pollution we find an even closer link with the past. Simon, speaking of the Thames, had no hesitation in stating " As a matter greatly to be desired in the City of London that the noble river which ebbs and flows beneath its dwellings should cease to be the drain-pool of our vast metropolis ; and that the immeasurable filth which now pollutes the stream should be intercepted in its course and be conveyed to some distant destination, where instead of breeding sickness and mortality it might become a source of agricultural increase and national wealth ". How many Medical Officers of Health faced with the present-day pollution of our rivers and streams could make this comment ? It is a source of recurring anxiety and not least when they have to advise their Councils on the unsuitability of river bathing pools. Indeed this question of house drainage and river pollution illustrates well the differences between Simon's time and our own. Some of the sanitary defects which he denounced so forcibly are now to be found in their original state only in rural areas and on the fringes of some towns. On the other hand the remedy of these defects has, in turn, created others. Substitution of a water-carriage system of sewage disposal for the cess-pool has enhanced the risk of pollution of our streams, rivers and the seas round our shores. Many Medical Officers of Health of seaside resorts must feel anxious during the summer months when they see thousands of

people bathing from the shore and they remember the vagaries of the ebbs and flows from the sewage outfall.

Water Supply

It is in water supplies that one of the greatest of our residual problems is found. Simon thundered against inadequacy as well as impurity and said " I am sure that I do not exaggerate the sanitary importance of water, when I affirm that its unrestricted supply is the first essential of decency, of comfort and of health ; that no civilisation of the poorer classes can exist without it ; and that any limitation of its use in the metropolis is a barrier which must maintain thousands in a state of the most unwholesome filth and degradation ". In the big towns his comments do not apply today with the same force but in the rural areas, large villages and small towns they are reproduced by many Medical Officers of Health. In a recent report is a note headed " Shallow Well Water Supplies ", which says, " There are still several localities in the district which have to depend on shallow wells and springs as their only water supply. Each year, fortunately, sees more and more of these unsatisfactory supplies being eliminated as the public water mains continue to spread throughout the district ". The purity of water supplies in urban areas is now a matter for scientific laboratory control aided by the protection of the catchment area. But an equally serious potential danger remains. The growth of our large cities together with that " unrestricted supply " demanded by Simon has led, particularly in the environs of London, to a lowering of the water levels. Sources of doubtful purity and seasonal shortages of water remain, therefore, a public health risk in some parts of this country.

Housing

The most interesting parts of Simon's reports are to be found under the heading of " Social Condition of the Poor ". Many of the reforms for which he pressed have been effected. Housing conditions have been vastly improved and overcrowding abated. Public baths and washhouses have, as he foresaw, encouraged cleanliness. Medical Officers of Health have still their problem families but few, if any, can write now that " It is too true that there are swarms of men and women who have yet to learn that human beings should dwell differently from cattle ; swarms, to whom personal cleanliness is utterly unknown ; swarms, by whom delicacy and decency in their social relations are quite unconceived. Men and women, boys and girls, in scores of each, using jointly one single common privy ; grown persons of both sexes sleeping in common with their married parents ; a woman suffering travail in the midst of

the males and females of several families of fellow lodgers in a single room ; an adult son sharing his mother's bed during her confinement ;— such are instances recently within my knowledge (and I might easily adduce others) of the degree and of the manner in which a people may relapse into the habits of savage life, when their domestic comfort is neglected, and when they are suffered to habituate themselves to the uttermost depths of physical obscenity and degradation ". We have gone a long way since those words were written.

Industry

In his attack on offensive and injurious trades, Simon included the smoke nuisance, but we have greater responsibilities to face. The vast bulk of the industry of this country is carried out in small factories. Statutory provision for safeguarding the health of the work-people has been in existence for a long time, but its practical application remains. Even the elementary principles of cleanliness and ventilation have yet to be enforced adequately in some areas. On the wider aspects of industrial health there is the double need to ensure that the services provided under recent legislation, and particularly the National Health Service, are readily available to industry, and secondly that they are closely co-ordinated with the preventive health services.

Food Hygiene

Our habits have changed much in the last 100 years and within the last few years the custom of communal feeding has created new problems. The result of imperfections in our present methods of preparing and handling food is shown by the large number of outbreaks of food poisoning reported in the medical and national Press. Memorandum 188/Med. on Food Poisoning, was issued by the Ministry of Health in 1935 and a revised edition has recently appeared. The last paragraph of Appendix C to that memorandum reads " Outbreaks of this sort are particularly liable to occur under unhygienic conditions of food preparation. When investigating them it is advisable to take note of the condition of the kitchen walls, floors, equipment, sinks, etc., as well as of the standard of kitchen hygiene, the cleanliness and intelligence of the staff, the adequacy of the arrangements for hand washing by the staff after use of water closets, for the washing of utensils and for the control of flies, vermin, etc." These words, in a memorandum which also refers to the resources of the Public Health Laboratory Service administered by the Medical Research Council, exemplify the main problem of today. On the one hand are the full resources of modern bacteriology and epidemiology. On the other, the need to restate in an official publication the elementary

principles of hygiene and to question " the cleanliness and intelligence of the staff ".

The Hazards of Today

It may, therefore, be claimed that in spite of much progress we face today environmental hazards as serious as those confronting the legislators a hundred years ago. Changed conditions of life have provided new problems, notably in the handling and preparation of food. Other dangers have been increased by the very measures taken to protect the public health. In many rural areas the original environmental conditions remain unchanged. In the interest and excitement of launching the National Health Service it is easy to forget the need for constant vigilance over our environmental health services and it is well to remember that it is only twelve years since three hundred and forty cases of typhoid occurred in the Croydon outbreak.

We live in a world of extremes: a world which it is possible to circumnavigate in a few hours: a world in which the carelessness or ignorance of one person may cause disease or death for many. The vigilance of the public health services must therefore be reinforced by that " lay faculty of educated common-sense " (to quote Simon again) in order that the delicate balance of our modern health organisation may not be upset by the ignorance or folly of the people those services are designed to protect.

BIOGRAPHICAL NOTES

A. LESLIE BANKS, M.D., D.P.H., F.R.C.P., Barrister at Law.—Professor of Human Ecology, University of Cambridge. In 1934 appointed Divisional Medical Officer, Public Health Department, London County Council, where duties included slum clearance and special public health investigations. Entered Ministry of Health in 1937. Later became Principal Regional Medical Officer, Eastern Civil Defence Region. 1946–48 engaged on National Health Service and was Principal Medical Officer with the responsibility for the North-East and North-West Metropolitan and East Anglian Regional Hospital Board areas. Publications include papers on the National Health Service, The Care of the Infirm and Long-Stay Patient, Cremation and Euthanasia.

FLETCHER D. WOODWARD, M.D., F.A.C.S.—Professor of Otolaryngology and Chairman of the Department of Otolaryngology, University of Virginia Medical School and Hospital. Member, American Medical Association, and American Academy of Otolaryngology and Ophthalmology. Fellow, American College of Surgeons.

Hlth. Educ. J., 1950, 8, 21—28

SAFETY ON THE ROADS

By FLETCHER D. WOODWARD, M.D.,
University of Virginia Hospital, Charlottesville, Va., U.S.A.

HAVING been impressed by the rising number of injuries and deaths occasioned by the automobile, it occurred to me that by studying the types and mechanisms of these injuries certain facts could be determined which would prove that many of these injuries and deaths could be prevented by modification in automobile design.

The laws governing the use of the automobile should also be studied by competent authorities, and made uniform and sensible. Among these objectives would be the establishment of uniform top speeds for certain types of highway, as well as for residential and business districts. The daily experience of most drivers has convinced them that these speeds could be raised in many instances without increased danger. A source of conflict and subjective resentment to law and law officers would then be removed and enforcement aided by public opinion. Perhaps the elimination of the horn would also prevent many accidents, by making the driver more alert and responsible. Certainly nervous tension would be lessened in urban communities.

In 1946, there were 33,700 deaths from motor vehicle accidents in the United States. Injuries were approximately 1,200,000.[1] Costs, including property damage, totalled $2,200,000,000. There was an improvement in 1947 and 1948. But the first three months of 1949 have shown an increase again. For my state, Virginia, there was a 36% increase in these deaths for the first three months of 1949, over a similar period in 1948. These appalling figures can and must be improved. The figures of the National Safety Council show that most fatal accidents occur at night, and that in urban areas the pedestrian deaths are greater than the non-pedestrian ; whereas in rural areas, the reverse is true.

Since approximately 15 per cent of all accidents are caused by mechanical defects, frequent spot checks of automobiles should be made by the police. Since drivers with physical defects are involved in about 8 per cent of the fatal accidents, periodic and careful re-examination of all drivers should be carried out. However, in defence of drivers with physical defects, I should like to quote the following statement of Mr. W. C. James, Director, Statistical Division, National Safety Council, in a personal communica-

[1]During 1948 3,979 people were killed and 135,741 injured in road accidents in England and Wales. These figures include casualties from *all* road accidents whereas the American statistics quoted above account only for accidents involving motor vehicles.

tion : " I think the actual experience of drivers with some physical defect, as indicated by state reports, tends to bear out my belief that most drivers with defects, particularly when those defects are for the most part corrected by mechanical devices, are able to compensate for those defects sufficiently to drive a car safely in non-commercial operations."

Minimal standards of physical fitness should be set up, to guide the police in their examination of prospective drivers and in periodic re-examination of all drivers. In establishing such minimal requirements, it would be necessary to consider visual acuity, visual fields, depth perception, night blindness, persistence of dazzle, hearing, reaction time, and many other physiological qualities involved in the operation of the automobile.

Safe driving should be taught teen-agers in schools, since the death rate in the 15–24 year age group in 1946 was 33.8 per 100,000 population—a figure exceeded only by the rate among persons 65 or older. Further, a considerable number of these elderly victims were pedestrians.

In 5,521 high schools out of 25,300, classroom driver education is offered, and 545 schools also provide actual behind-the-wheel instruction. Two million boys and girls reach driving age each year in this country, of whom 50 per cent become drivers. A study by the American Automobile Association of young men drivers graduating from Cleveland high schools indicated that the accident rate of those who received training in high school was substantially lower than the accident rate of those without training.

Although the motor vehicle accident rate has been substantially reduced over the years, despite heavy increases in traffic volume, there is still much to be done. In the early 1930's approximately 16 persons were killed for every 100,000,000 miles of motor vehicle travel. In 1947 fewer than 9 persons were killed for every 100,000,000 miles. This reduction in mortality rate can be attributed to the indefatigable work of the National Safety Council and the many other persons and organisations who were interested in this problem. Without this reduction there would have been close to 60,000 deaths in 1947, as compared to 32,000 which actually occurred.

However, in spite of the success of these campaigns, the automobile still remains a lethal and crippling agent, and since there appears to be little likelihood of accomplishing radical changes in human nature in general and exuberant youth in particular, it would seem the part of wisdom to shift the emphasis, for the moment at least, to desirable alterations in the machine itself, rather than to place all emphasis on attempts to bludgeon ' old Adam ' into safer driving practices.

Our highways are becoming increasingly laden with cars driven by

average persons, and it appears inevitable that these machines will continue to collide, pass on curves, fail to observe stop signs, leave the road at high speeds and afflict mankind much as they have in the past. A shift of thought away from the fields of 'safety regulations' and 'law enforcement' has resulted in the suggestions to be presently advanced which are intended as measures to save life and prevent injury when automobiles are mismanaged.

In studying the types of accidents as seen in the University of Virginia Hospital, certain injuries were seen to predominate. These are injuries to the face and head, usually caused by impact of the head against the dash board, the windshield or the rear of the front seat. Crushing injuries to the chest of the driver occur when he is driven against the steering wheel. Injuries to the hip, pelvis, patella and femur are caused by the protective rotation of the body when propelled forward on impact. Injuries to the elbow are usually caused by a blow to the elbow when projecting from the window, and usually affect the driver. Of course, many other types of injuries occur, of greater or lesser degree, but these comprise the most serious and the most frequent in our experience. Associated with many of these are internal injuries to the abdominal viscera, lungs and brain. Some of these victims suffer from severe shock and subsequently die.

Studying the reasons for and the mechanics of these accidents makes it obvious that redesign of the automobile can prevent many. The opinion that automotive engineering is of professional interest to the physician may appear at first glance to be ill-founded. However, investigation of the types of injuries encountered and the close relationship between engineering and medicine, as exemplified during the past war, particularly in aviation medicine, should convince the most doubtful of the advantages in such a relationship to the safety of the passenger. In airplane design, the engineer has realised that performance is dependent on two distinct factors, the machine itself and its operation. The same is equally true of the automobile, its record on the highways depending on the characteristics of the machine as well as those of its driver.

To combat this appalling carnage so evident to the physician who is called on to treat the victims at all hours of the day and night, it is obvious that he should use his influence both as a citizen and as a professional person. To this end, the following suggestions for safety are advanced.

Speed

Speed was a factor in two out of five fatal accidents, and in many of our most serious accidents it was the main factor. Whenever

UNIVERSITY OF VIRGINIA HOSPITAL
7 MONTHS
OCT. 1947—MAY 1948

Type	Number	Windshield	Dashboard	Steering Wheel	Others
INJURIES—HEAD AND NECK					
ABRASIONS LACERATIONS CONTUSIONS	63	29	22	5	7
FRACTURES	10	2	5	1	2
CONCUSSIONS	9	4	4	0	1
TOTAL	82	35	31	6	10
INJURIES—HIP AND LEG					
ABRASIONS LACERATIONS CONTUSIONS	18	0	16	0	2
FRACTURES	10	0	6	0	4
TOTAL	28	0	22	0	6
INJURIES—ARM					
ABRASIONS LACERATIONS CONTUSIONS	4	2	1	0	1
FRACTURES	3	1	0	0	2
TOTAL	7	3	1	0	3

A statistical record of the types and sources of injuries seen at the University of Va. Hosp., Char., Va., during a period of seven months. This data was compiled from the records of approximately one-third of the cases only, since in the remaining two-thirds the source of the injury was not stated.

a driver is involved in an accident while operating faster than conditions warrant, speed is reported as a factor in the accident, although this speed may be no more than 15 to 20 miles per hour. However, in 20 per cent of the accidents in which speed was a factor, the speed was greater than 50 miles per hour. The problem of high speeds could be solved simply by the use of governors on all cars, limiting the top speed to 55 miles per hour, but in no way interfering with acceleration at lower speeds. Since one is inclined at first hand to assume that the public will not tolerate such control, it might be interesting to quote from a survey made by the Traffic Engineering and Safety Department of the American Automobile Association. The following questions were asked, among many others. " If a simple device were developed to limit the top speed without affecting acceleration at lower speeds, would you favour its incorporation in new passenger cars ? " Of the 4,102 replies received, 4 persons answered " yes " for each 3 that answered " no." The top speed in the group favouring governors was 55 miles per hour.

Structure

Frame and body of welded ' unit construction ' would be helpful. Such structure should also include ' crash struts,' as found in aircraft.

Windshield and Windows.—Windshields and windows should be made of a ' plastic ' material, in order to eliminate cuts from broken glass, a common finding in accident victims. A windshield which ejects on impact is at present standard equipment on one of the newer automobiles and should, no doubt, prevent many injuries. However, a ' plastic ' material instead of safety glass will give added protection : although special cleaning materials and technique are required, their use in aircraft is universal and satisfactory. The same material should also be used in headlight lenses. Both windshield and rear windows should more nearly revert to the vertical, for better visibility, particularly important in rain, sleet and snow.

Doors.—Single doors should be standard, with windows large enough to serve as escape hatches and high enough to prevent passengers from riding with their elbows comfortably protruding. Sponge rubber elbow rests would take care of passenger comfort. The door latches should be operated both from rear and front seats, with the safety lock on the front latch, to prevent the opening of the door by child passengers.

Bumpers.—The front bumper should be mounted on ' oleo shock absorbers,' in a manner similar to the landing gear in airplanes, which quickly and efficiently absorb the shock of the heaviest planes on landing, even when the landing is poorly executed.

Tyres.—(a) Tyre treads should be designed to give maximum traction and to provide the best anti-skid qualities, on the basis of actual tests by some disinterested agency. (b) Danger from blow-outs should be eliminated as far as possible by the use of blow-out-proof tubes, even at the expense of some riding comfort, if necessary.

Interior Devices.—(a) A glare-proof rear view mirror, for night driving ; (b) a latch to lock the backs of front seats in position in the coach type cars, to prevent the added impact of them to the front seat passengers in sudden stops ; (c) safety belts, such as are used as standard equipment in aircraft—their use might well be one of the most effective single factors in preventing serious injury ; (d) a hydraulic steering column which will move forward under a force of approximately 100 foot pounds —this would do much to prevent chest injuries of the driver from forceful impact against the wheel ; (e) crash pads—the installation of sponge rubber padding on the dash and back of front seats would eliminate many of the head injuries so common today ; and (f) elimination of all projecting handles, knobs, buttons and such items from the interior and also from the exterior wherever possible.

Exterior Lighting.—The importance of exterior lighting to safety has been neglected by the manufacturers of passenger cars. Such lighting should include : (a) red reflectors at corners of fenders and top, (b) blinking turn indicators front and rear, (c) large stop light and dual tail lights, and (d) luminous paint on outside margins of trucks, trailers and buses and consideration of its use for strip marking on highways.

Vision.—(a) The provision of the largest possible visual fields is of the utmost importance. This should be of a full 360 degrees, with top-supporting columns reduced to a minimum compatible with safety in the event of turning over. Front supporting columns should be moved further to the rear.

Lowering and shortening of the hood would give a much better view of the roadway, especially on sharp hills. In the Automobile Association of America's survey, two-thirds of the replies checked the driver's view of the roadway as the most important single factor in body design. Less than 1 in 6 voted for appearance. More nearly vertical windshields and rear windows have been previously mentioned.

(b) Shiny, reflecting surfaces should be eliminated from the driver's visual field. This could be simply accomplished by eliminating all chromium trim and by painting the top of the hood and dash a non-reflecting dull optical black. The use of such paint on metal aircraft has long been an established convention.

(c) The speedometer should be placed at the top of the instrument panel, directly in front of the driver, since it is his most important instru-

ment. In addition to the miles per hour, it should also include the stopping distance in feet under average driving conditions, as a constant reminder for safe driving. Both the speedometer and other dials should be illuminated by means of a ' Navy red ' light to maintain the driver's dark adaptation at night. A flashing red light or auditory signal might well be included to indicate the maximum safe speed of 55 miles per hour. Again, the Automobile Association of America's survey noted four fifths of their replies voted for dials to be located for easy reading. Finally, the light switch should be placed on the driver's side of the panel and designed to prevent error when operated by ' feel.'

(d) The use of a polarised windshield to minimise glare from the highway would be of particular value and, when coupled with oppositely polarised headlight lenses, ' blinding ' in night driving would be eliminated. The added cost could, no doubt, be largely absorbed by the elimination of clocks which do not run, radios, radiator ornaments and other useless gadgets which are now included in the cost of an automobile whether wanted or not.

(e) More adequate defrosters and windshield wipers should be provided. This defrosting and wiping equipment should be installed at both windshield and rear windows, and the wipers should be so designed as to wipe a larger area than at present.

Comment

There is an abundance of evidence (obtainable from air crash reports) that the adoption of construction methods and safety features now employed by the aviation industry would render it at present possible to build motor cars that would be less likely to be involved in accidents, and which, even if they collided with another vehicle or immovable object or if they left the road at high speed and overturned, would be so constructed that the chances of injury to their occupants would be greatly reduced. It is suggested that a co-operative attempt by the automobile industry and the medical profession to produce such vehicles would be well worth while, especially since the industry will soon be faced with the design of radically different vehicles.

The magnitude of the medical, economic and social problems entailed by the continued use of the motor car in its present form far outweighs in importance any monetary consideration arising from the necessarily high costs of such research and new design. The only influence of aircraft design apparently so far adopted by automobile engineers is the erroneous one that the aerodynamic principles of a jet-propelled aircraft should be applied to a vehicle whose speed should be limited to 55 miles per hour on the ground.

I agree with Mr. A. W. Stevens, President of the Automobile Safety Association of Boston, when he says, " Automobiles should be redesigned to stress safety rather than speed and appearance. This suggestion has often been made, but has been religiously disregarded by automotive engineers and manufacturers."

I also agree with a recent editorial in the *Times Dispatch*, Richmond, Virginia, in a discussion of this problem, which concluded with this statement: " Disregard of human life has always been the measure of barbarism. If we are to become more civilised, we must place the value of human life above the prestige value of speed and appearance in motor cars."

It is my confirmed belief that ultimately the design of the automobile will include installations necessary to the reasonable safety of its passengers. Meanwhile, it is interesting to speculate as to the traffic casualty incidence which will be tolerated before some concerted action along these lines will be taken—2,000,000 casualties annually ? 3,000,000 ? It would be to the credit of the medical profession generally if the impetus toward furnishing the public with a safer means of transportation should be supplied from among their number.

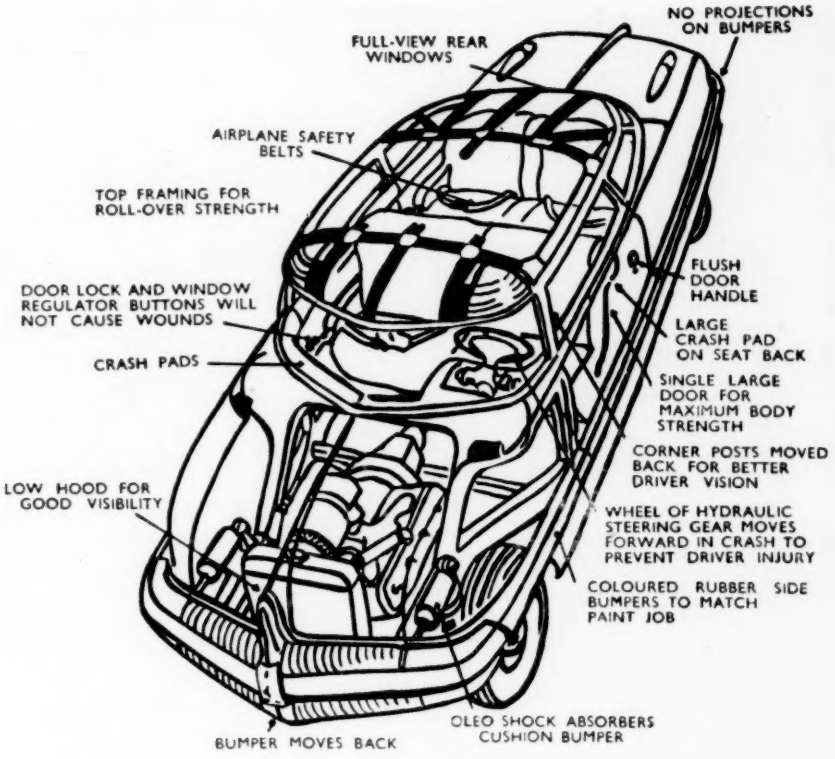
REGIONAL COURSES

The Central Council for Health Education has arranged a programme of Regional Courses for Assistant Medical Officers of Health, Health Visitors and School Nurses for the first quarter of this year. The subject is " Principles, Methods and Media of Health Education."

These courses are free of charge to the nominees of Medical Officers of Health, and except for the course at Bristol, which is residential and lasts from the evening of January 6th until the evening of January 8th, the courses are non-resdiential and last two days. The programme is as follows:

Birmingham, January 3rd and 4th; Cambridge, April 4th and 5th; Cardiff, March 16th and 17th; Leeds, March 9th and 10th; Liverpool, January 31st and February 1st; Manchester, February 2nd and 3rd (Assistant Medical Officers), February 16th and 17th (Health Visitors and School Nurses); Newcastle, January 10th and 11th (Assistant Medical Officers), March 7th and 8th (Health Visitors and School Nurses); Nottingham, March 23rd and 24th; Sheffield, January 24th and 25th; London (dates to be arranged).

In London, Manchester and Newcastle separate courses will be provided for Assistant Medical Officers and for Health Visitors and School Nurses, etc.; at each of the other centres a combined course will be provided. Details may be obtained from the Medical Adviser and Secretary, Central Council for Health Education, Tavistock House, Tavistock Square, London, W.C.1.


NO PROJECTIONS ON BUMPERS
FULL-VIEW REAR WINDOWS
AIRPLANE SAFETY BELTS
TOP FRAMING FOR ROLL-OVER STRENGTH
DOOR LOCK AND WINDOW REGULATOR BUTTONS WILL NOT CAUSE WOUNDS
CRASH PADS
LOW HOOD FOR GOOD VISIBILITY
BUMPER MOVES BACK
OLEO SHOCK ABSORBERS CUSHION BUMPER
FLUSH DOOR HANDLE
LARGE CRASH PAD ON SEAT BACK
SINGLE LARGE DOOR FOR MAXIMUM BODY STRENGTH
CORNER POSTS MOVED BACK FOR BETTER DRIVER VISION
WHEEL OF HYDRAULIC STEERING GEAR MOVES FORWARD IN CRASH TO PREVENT DRIVER INJURY
COLOURED RUBBER SIDE BUMPERS TO MATCH PAINT JOB

Design of car embodying proposed safety devices, as drawn by Stewart Rouse, *Popular Science Monthly*, April, 1947, in article by Devon Francis, "Cars Can Be Safer."

A Pharmacy in 1497, from *Das Buch zu Distitlieren*, by H. Brunschweig

Hlth. Educ. J., 1950, 8, 29—30

MILESTONES IN MEDICINE
9. THREE REMEDIES OF THE MIDDLE AGES

By E. Ashworth Underwood, M.A., B.Sc., M.D., D.P.H., F.L.S., *Director, The Wellcome Historical Medical Museum; Hon. Lecturer, University of London.*

The methods of treatment used in the Middle Ages included certain preparations which had been employed, with modifications, from the days of antiquity. Some remarks on three of these will show the credulity of the age—and indeed of succeeding centuries.

The preparation called *Theriaca* dates from the second century B.C., and Pliny tells us that the formula for making it was inscribed in the Temple of Asclepios at Cos. It was used against the bites of poisonous animals, such as snakes. Mithridates VI, King of Pontus, was in constant fear of being poisoned during his strife with the Romans, and as an antidote he evolved a preparation—later called ' the Mithridate '—which contained fifty-four ingredients, including gentian and various spices. Other types of theriaca became common, and a very celebrated example was ' the Venice Treacle ', which contained sixty-one ingredients. The Treacle was prepared—in Venice and other Italian cities—only by the chief officers of the apothecaries, and in the presence of learned physicians. These functions were still being held in 1646, since John Evelyn noted in that year that he had seen one. A later example of a ' treacle ' included no less than two-hundred and fifty different ingredients! Most of these preparations contained spices and vipers, which in France and other countries were looked upon as having stimulating properties. Theriacs were much used in England from the eleventh century onwards. When Claude Bernard, the founder of experimental physiology, was an apprentice to an apothecary about 1830, his master would never allow him to throw away any preparations which he had spoiled; they were to be kept for making ' the theriac '. It was perhaps this fact which made Bernard realise what a hit-and-miss affair treatment by drugs could be, and which led him to the accurate physiological work which laid the foundations of modern pharmacology. A modified form of theriaca was in the first London Pharmacopoeia of 1618, and was included in subsequent issues until 1746.

Another remedy which was much in use in these times was the *Hiera picra*, or Holy Bitter. This preparation was first used in Classical Greece, and most of the varieties—though not all—contained aloes. A famous example was the Hiera described by Alexander of Tralles about 550 A.D., and in subsequent centuries it was much used in England. It also appeared in the early London Pharmacopoeias. Such preparations were used for many diseases, such as those of the stomach, spleen and liver.

A peculiar remedy which had a great vogue was *Terra sigilata*, the sacred sealed earth. About the beginning of our era it was obtained from certain caves on the island of Lemnos; it was mixed with goats' blood and formed into lozenges, each bearing an impression of a goat. The lozenges were used for haemorrhage, for diseases of the spleen and liver, and also as an antidote against poisons. Later on, similar advantages were claimed for earth from other places, including Malta, and in each case the lozenges were impressed with a particular seal. In 1553 a celebrated account was given of the digging of the sacred earth at Lesbos. The ceremony was an official one, and none of the earth dug up could be used or sold until after it had been 'sealed'. Even as late as 1890 these ceremonies were still being held; but the earth by then had lost much of its virtue—driven underground, shall we say, by the onward march of science.

BIOGRAPHICAL NOTE

JOHN R. SEELEY.—Executive Officer of the Canadian National Health Committee for Mental Hygiene, and Clinical Teacher, Department of Psychiatry, University of Toronto. Served as Scientific Adviser to the Director of Personnel Selection in the Canadian Army. After the war he accepted an appointment to the Department of Sociology, University of Chicago. Returned to Canada in the spring of 1948 and is now engaged on a project in mental health research known as the Forest Hill Project. Served as one of the Canadian representatives at the International Congress on Mental Health, held in London in August 1948. Joint author of *The Mental Health of Miami County, Ohio*; author of *Causes of Race Prejudice, Psychology and Social Health* and *Can Man-in-Society Survive?*

Hlth. Educ. J., 1960, 8, 31—35

HEALTH EDUCATION IN THE WEST INDIES

By S. Moosai-Maharaj, B.A.(Hon.), M.R.S.T., M.P.H., *Health Education Officer, Trinidad and Tobago.*

Health Education put quite simply is education in health. It seeks to close the wide gap which exists between knowledge of health matters on the one hand and the practical application of that knowledge to daily life on the other. The public consists of a group of men, women and children with varying characteristics of age, sex, race, religion, beliefs, interests and occupation. The assumption is that all the habits, attitudes and experiences affecting health are the concern of health education. The aim of this type of education is to promote personal and community health and also to provide through informed opinion active support for public health measures whether they be curative or preventive. The Constitution of the World Health Organisation defines health as a " state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity. The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition ". The promotion and maintenance of such a well-being is the scope of health education.

The process of health education has been going on for some time. One might say the same about living. The question is " How well have people lived ? " Traditional continuity is not enough. There must be a standardisation of effort with clearly defined objectives to attain which recognised methods and techniques must be employed.

Health Education Methods

Whatever the objectives of health education, the tools at the disposal of the health educator remain the same. They include the spoken word, printed matter, motion pictures, radio, demonstrations and health exhibits at various centres.

For all health education work publicity is essential. Public health education has to deal with a wide field including knowledge of diseases and how they can be prevented, the public health aspect of dentistry, community nursing, elementary sanitary engineering, nutrition and child welfare. In addition, the principles of pedagogy, psychology, social science,

and physiology and hygiene have to be applied if the best results are to be ensured. All these are the foundations upon which public health is laid. In order to cover such a wide field every worker in the Health Department becomes a health educator.

Health education operates in the Colony of Trinidad and Tobago, B.W.I., through seven main channels:

Training of teachers at educational institutions.

Training of pupils in primary schools.

In-service training of Health Department field personnel.

Training of voluntary groups and workers.

Community health education.

Collaboration with other departments and agencies with similar objectives.

Home visiting by community nurses, sanitary inspectors, hookworm attendants, and other field officers.

Teachers and Pupils

There are three colleges for the training of teachers in the Colony ; a uniform syllabus in Hygiene and general sanitation drawn up by the Health Department has been in operation at these institutions for some time now. Most of the lectures are given by officers of the Health Department.

The syllabus deals with various aspects of personal and community health and includes essential material on child care and family health as well as on endemic diseases and the methods adopted for their elimination or control. In addition, lectures and demonstrations based on the syllabus of the British Red Cross Society in First Aid and Nursing are given by registered lecturers of the B.R.C.S. These Red Cross lectures are followed by examination at both centres plus the regular departmental examination in hygiene, and successful students are awarded Red Cross Certificates. This arrangement qualifies teachers to do Junior Red Cross work in primary schools. This type of training, therefore, provides an excellent medium for the spread of accurate information on health subjects and the cause of health education is further strengthened by the subsequent imparting of this information by these very teachers to pupils in primary schools.

The teaching of hygiene in primary schools has always been the responsibility of class teachers. The primary school age level is a very significant period for education in health, for during these formative years habits and attitudes are being developed. Hence the necessity for practical health education. Training colleges provide teachers with the facts for such a function. In addition, nurses, sanitary inspectors, the nutrition

officer, the health education officer and dental health and medical officers collaborate with schools in the interest of the pupils' health. By way of further training, special school health talks spread over the regular school term are given by our field staff in areas where the Health Department has been intensifying its programme, with particular reference to malaria, hookworm and yaws. The specific objective of these talks is the elimination of common ailments affecting pupils in urban and rural areas. Along with class lessons and health talks, the pupils' guided activities in relation to school gardens, nutrition, dental care, sanitation, farm clubs and 4-H clubs are of material help. Our primary school pupils are our future citizens and the more systematic our health education of these children, the more quickly will the quality of our social life improve.

Health Education of Voluntary Workers

Such groups are organised for training because of their special interest in community health problems. Membership is limited to adults. These organisations generally comprise the residents of the district and include teachers, officers of local associations, welfare workers, church representatives, county councillors, members of local health authorities, rural agricultural assistants and health department personnel. In areas where community councils already exist, health education is incorporated in their programme and these councils assume the joint responsibility of sponsoring the health training scheme.

The new approach of public health emphasises the need for community participation and active co-operation in public health activities based on knowledge and not, as formerly, on fear of legal consequences or neglect. This is the particular aim of the Health Department in regard to the training of voluntary workers and groups.

A standardised syllabus of lectures drawn up by the Health Education Unit serves as the basis of training of these voluntary bodies in the preventive aspects of endemic diseases. The talks are given by officers of the Health Department, the Department of Agriculture, private practitioners and other local experts in the special fields. They include such subjects as :

Personal hygiene, health and disease ; carrying out a health survey ; hookworm disease and its control ; Buildings and building bye-laws, and privy construction ; refuse, composting and vegetable gardens ; food and nutrition ; care of the teeth ; maternity and child health ; common ailments in the family ; household insect pests ; malaria and its control ; tuberculosis and its control ; venereal diseases and their control.

The normal procedure at one of these programmes is to have the talk, follow it up with a pamphlet on the subject and promote discussion

based on the needs of the district and what could be done to meet those needs, and supplement this further by showing a number of suitable health films.

It might be of interest to mention that at the moment the Health Department has about 21 different pamphlets on health subjects, two of which, on venereal diseases and on hookworm disease, are also printed in Hindi. All these pamphlets are made available to the public on request. Quite a number of organisations are being supplied with them for the use of their members.

Health Education Reaches the Masses

Reference has already been made to the school population which accounts for a large proportion of our people. Mass education projects in hygiene are operated through the leadership of voluntary groups, through the co-operation of other official and semi-official agencies, and by means of mass meetings, cinema, posters, pamphlets, health exhibitions, and special community classes in child welfare, cookery, housecraft, etc. These include practical demonstrations on adequate and economic disposal of refuse, composting, privy construction, mosquito and fly control procedures and on the planting of kitchen gardens attached to the Health Centres and primary schools. In addition, house to house contact is made by sanitary inspectors, community nurses and field attendants of the Malaria Division, V.D. Division and Hookworm Units to encourage the community in better ways of living and to develop the attitude that the family is the basis of good health.

Health Education Through Other Agencies

Other agencies are engaged in health education, but with rather specific objectives. A useful amount of education in health is done through the Department of Agriculture and the Agricultural Society in regard to the growing of food crops and animal husbandry, and through the Information Office, British Council, Trinidad and Tobago Welfare, the British Red Cross Society, the Child Welfare League, The Nursery Association, Safety Associations, City and Borough Councils, Community Welfare Councils, Churches, such organisations as Keep Fit Clubs, Athletic and Sports Clubs, not to mention the assistance of our libraries in stimulating readers to become more interested in healthy surroundings.

Several health education conferences have already been held and others are planned. In addition to conferences of this nature, there is a constant interchange of information between Trinidad and our neighbours on matters pertaining to health, with the specific objective of fostering a growing health consciousness in the population.

The Task Ahead

The task that lies before health educators in this area is the building up of a healthy community based on the widespread knowledge of health laws, with particular emphasis on the practical application of these laws in every home. In view of the traditional attitude towards health and disease and the significance and relationship of other social and economic problems, the task is fraught with difficulties. But it is worth the struggle. It is gratifying to note, however, that every effort is being made on a partnership basis to face this situation, and it is hoped that the time is not too far distant when the struggle for health will have been won and every citizen will be in a better position to make his maximum contribution to state and community alike.

NATIONAL CONFERENCE AND EXHIBITION

The Central Council for Health Education held a National Conference on Health Education at the Central Hall, Westminster, on November 8th and 9th. The Conference was attended by about 900 delegates from local authorities and organisations interested in health education.

Lord Woolton presided on the first day, when Professor W. O. Lester-Smith of London University spoke on "The Aims and Methods of Health Education", and Professor Andrew Topping of Manchester University on "Health Education in the Prevention of Disease".

On the second day delegates heard Mr. D. R. Hardman, Parliamentary Secretary to the Ministry of Education, Professor R. H. Parry of Bristol University on "Health Education in the Promotion of Health", and Dr. Robert Sutherland on "Health Education in Practice—The Local Authority's Part". Speakers at the dinner on November 8th included Lord Jowitt, Lord Woolton, Dr. Charles Hill, Colonel the Rt. Hon. Walter Elliott, Dr. H. C. Maurice Williams, Mr. F. L. Freeman (President of the Association of Education Officers), Dr. E. K. Macdonald (Chairman of the Council), Sir Wilson Jameson and Mr. Kenneth Bird (Fougasse).

The Exhibition provided valuable information about sources from which those carrying out health education can obtain guidance and material.

A full Report, including a catalogue of the exhibits, will go to all delegates and will be on sale to anyone else interested.

Hlth. Educ. J., 1950, 8, 36—44

THE ERADICATION OF TUBERCULOSIS
A PLEA FOR A NEW APPROACH

By Frederick Heaf, M.A., M.D., F.R.C.P.

There are two ways by which we may try to control tuberculosis: the one is from the angle of the individual suffering from the disease, and the other from a preventive and socio-medical standpoint as it effects the community as a whole. The two ways of regarding the disease are not diametrically opposed to each other, for the aggregate of individual needs becomes the requirement of the nation. But in planning with our limited resources we must not sacrifice what is deemed necessary for the majority by over-attention to the demands of the individual. The needs of the sufferer from tuberculosis are efficient treatment and assistance for himself and his family to recover from the economic and social deterioration that has resulted from the disease. To provide these, considerable expenditure, highly skilled teams, and elaborate organisation are needed, and even if these demands are satisfied we cannot promise at present a successful result. Nevertheless we are duty bound to attempt to provide the patient with the treatment that experience has shown is most likely to secure recovery. Unfortunately every case of tuberculosis is in itself a complex problem and needs individual treatment. It is therefore necessary to provide a wide variety of facilities if we are to meet the clinical needs of all patients. This involves very great expenditure of money. In fact, there is almost no limit to which we can go in attempting to cover the needs of all the tuberculous in the country. Clearly some economy and discretion must be exercised in the development of schemes for treatment. The limit of expenditure is mainly determined by the allowance made for tuberculosis in the national budget. It must be remembered that this allowance has also to cover the effort to attack the problem from the national standpoint, which aims at preventing the spread of infection to healthy persons and raising the resistance of the community so that those who are infected will not develop the disease. In other words our long-term purpose is to eradicate the disease from our midst. Although not so personal, and therefore less appreciated by actual sufferers from the disease, expenditure in this direction can give a much better return than on the treatment side because the number of variable and uncontrollable factors are not so great in preventive as in clinical work. The issue in preventive work is not confused by so many personal peculiarities of the individual, and therefore plans can be

simple and direct, being based on known facts of the etiology of the disease. In this respect help has been obtained from laboratory studies of the pathogenesis of the infection and from observations that have been carried out in many countries over a number of years on the influence of environment and standard of living upon the disease.

The Lesson of the World Wars

During the two world wars the nations of the world were subjected to abnormal conditions of which we have good records. The new circumstances under which people had to exist in different countries may be regarded as wide-scale experiments, the results of which are found in the effect of such abnormal conditions on tuberculosis mortality and morbidity figures. It would take a long time to review all the evidence, but the wars have helped to establish certain hypotheses that, although not completely proved, are based on sufficient evidence to enable us to use them as foundations on which to build a campaign for the prevention and final eradication of the disease. In the first world war the rise in tuberculosis mortality was directly proportional to the degree of involvement in the conflict.[1] The rise was considerable in most European countries and reached a peak during 1918. There was then a remarkably rapid return to normal. A complicating feature was the severe influenza epidemic of 1918, which caused the death of many infectious tuberculous persons and reduced the number of sources of infection. Shortly after this, except in central Europe, where a high mortality rate was still maintained, the standard of living, nutrition and the general environment of the people improved so that, with the removal of infection and the establishment of better conditions, the reduction in both morbidity and mortality was most impressive. This occurred in all European countries. Conditions which proved to be favourable for the development of the disease continued for a longer period in some countries than in others. However, this decline in tuberculosis figures continued until the second world war, when a rise occurred in most belligerent countries but in a different way from that of the first world war. In England and Wales the rise was comparatively small and coincided with periods of aerial warfare when 'shelter life' was adopted by large numbers of the population and control of infectious persons was relaxed or non-existent. A particularly sharp rise in the number of cases of tuberculous meningitis occurred during these periods. In Germany the rise in mortality was not appreciable until the latter end of the war when it was sudden and severe owing to a rapid deterioration in the standard of living and the conditions of life brought about by intense aerial bombing. In other countries the mortality figures were directly related to the state of the

national diet. Where the animal protein content of the diet remained high, the tuberculosis mortality remained low, as is seen in the returns from Denmark which, although an occupied country, had a plentiful supply of eggs, milk, butter and first class proteins during the war, and in which, as Professor Knud Faber has pointed out, an actual decrease in tuberculosis mortality occurred. The close relationship between the intake of animal protein and tuberculosis mortality figures has been brought out in statistics published in *Tubercle*.[2] One of the graphs showing this relationship is given on the opposite page.

In certain countries not influenced by the war, for instance South American states, a persistently high mortality has been recorded for many years and the disease is mainly of an acute type. This is also well seen in the negro races throughout the world and is evidence of a low inherent resistance which may be due to the high incidence of chronic infections such as malaria and parasitic diseases. The Chinese, on the other hand, appear to suffer from a low grade slowly progressive infection that gives rise to little toxaemia but eventually leads to generalised tuberculosis and death after a short period of severe symptoms.

Tuberculosis statistics of the two world wars have emphasised the importance of diet as a factor in influencing the resistance to tuberculous infection, and in particular the effect of low protein intake when energy output is high. The role of infection varies in different age groups and is highly important in individuals who have not come into contact with tuberculosis. The size, virulence, and time of the primary infection is all important in determining the course of the disease. The influence of overcrowding, anxiety, excessive work and exposure to inclement conditions is not so clear although there is evidence that these factors are significant in the elderly age groups. Otherwise it is not easy to explain the rise in the mortality in elderly males who must have been infected many times during middle age and only show significant symptoms of active disease during the later decades of life. In addition to the mass observations on countries enduring privations and abnormal conditions of existence, considerable advance has been made during recent years in the study of the significance of the primary lesion. This has been made possible by mass radiography and tuberculin surveys.

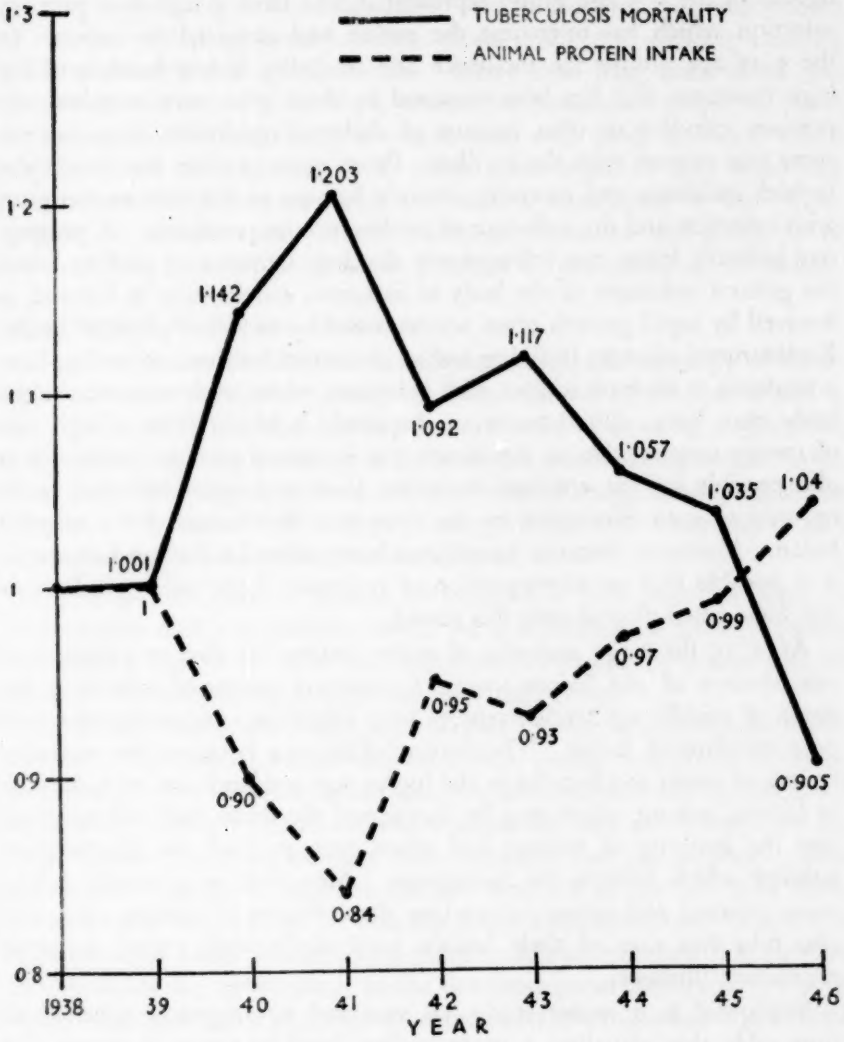
The Primary Infection

Perhaps the most important change in our conception of tuberculous infection is the recognition that the primary infection confers a certain degree of resistance to subsequent infection, and that those who have never been infected are at greater risk of developing active tuberculosis than those who have recovered from the primary infection. If we accept

ENGLAND AND WALES TUBERCULOSIS MORTALITY AND FIRST-CLASS PROTEIN INTAKE 1938-1946

1938 FIGURES TAKEN AS 1

From Data Supplied by Registrar General and Ministry of Food



Reprinted from *Tubercle*, 1948, xxix, No. 1, p. 21.

this hypothesis, and there is good evidence in the Prophit Survey in support of it, then it is necessary to revise the principles on which our schemes for prevention are founded. Incidence and mortality figures assume a new significance and the ability of the body to develop acquired resistance following the primary infection becomes of paramount importance in determining the course of the disease. The high mortality figures in the 0–5 age group represent deaths from progressive primary infection which has overcome the native and acquired resistance. In the 5–15 age groups the incidence and mortality is low because of the high resistance that has been acquired by those who have overcome the primary infection or who, because of sheltered conditions, have not yet come into contact with the bacillus. From 15 to 35 there is a steady rise in both incidence and mortality, mainly because of the increased contact with infection and the influence of adolescence on resistance. A progressive primary lesion not infrequently develops between 15 and 25 when the general resistance of the body to infection, particularly in females, is lowered by rapid growth often accompanied by excessive physical strain. Furthermore, changes in living and environment between 20 and 35 have a tendency to increase contact with infection, whilst such resistance as the body may have, either native or acquired, is lowered by a high rise of energy output with no significant rise in animal protein intake. It is also possible for the acquired resistance from a primary infection to be reduced or even eliminated by the complete sterilisation of the original lesion. Moreover, because school and home afford a sheltered existence it is possible that no augmentation of resistance from mild re-infections will have taken place during this period.

After 35 the large majority of active lesions are due to endogenous exacerbation of old lesions owing to lowered resistance following the strain of middle age, concurrent chronic infections, under-nutrition and poor standard of living. The marked difference between the mortality figures of males and females in the higher age groups is due to a number of factors, among which may be mentioned the more sheltered existence that the majority of women live when past 40, and the physiological stability which follows the menopause. Men over 40 generally follow more exposed and active occupations than women of similar ages, and also take less care of their health, particularly with regard to acute respiratory illnesses.

Wallgren[3] in a recent study has ventured to suggest a tuberculosis time table that visualises a more or less fixed sequence of events that follows a primary infection, whether it be of haematogenous or bronchogenic origin. If this is true, then treatment of the primary lesion becomes a secondary consideration to prevention, which is the reverse of

the present tendency of our medical services. It is of great importance to know whether we are dealing with a primary or a re-infection lesion. In the former case the significance of inherent resistance is all important, whereas in the latter, although resistance is still of great importance, much can be done to suppress the multiplication of the bacilli and to assist the local healing faculties of the tissues by antibiotics and collapse therapy. By this it is not intended to convey the idea that treatment is of no use. Great progress has been made recently in treating cases by collapse therapy and by antibiotics. Many lives have been saved and the prospect of recovery for those who suffer from tuberculosis has never been brighter, but treatment of active cases will never eradicate tuberculosis unless accompanied by a much more vigorous and systematic programme of prevention based on modern conception of the pathogenesis of the disease. New methods of treatment are going to be invaluable in stemming the recent progress of extensions of old lesions.

Application of Recent Advances

Some may consider that our knowledge of the epidemiology of tuberculosis is too incomplete to attempt to reorganise our tuberculosis schemes, but it will not be doubted that much more could be done by a systematic preventive programme aiming at an energetic search for sources of infection and protecting those who are not infected from developing active disease. We know sufficient to concentrate on the essentials of such a programme, which may be summarised as :—

(1) *Means to discover sources of infection.* This must be done by radiography and a systematic search for the bacillus by laryngeal swab or gastric lavage in all cases with symptoms of respiratory disease and all cases with abnormal shadows in the chest radiogram.

(2) *Estimation of an individual's degree of risk of contracting tuberculosis.* This implies nation-wide tuberculin testing to discover the negative reactors, on the assumption that negative reactors are in danger of contracting active tuberculosis when primarily infected if they are not carefully examined periodically after infection has taken place. This particularly applies to negative reactors who are in contact with infectious cases of tuberculosis. From the many observations on members of tuberculous families it seems that there is definite evidence that familial susceptibility is a determinant in the development of tuberculosis, so that special attention must be given to *all* members of families in which there is known to be a case of active tuberculosis.

(3) *Active steps to raise and maintain a specific resistance to tuberculosis.* This can be done by inoculation and by provision of extra protein during the most susceptible ages. B.C.G. confers a certain degree of

protection against natural primary infection, but only to those who have never been in contact with the tubercle bacillus. To those who have overcome the natural primary infection adequate protein intake should be ensured for all young adult contacts during the age periods 17 to 25 and in men of 45 to 55 working under strain, when active tuberculosis lesions usually develop from endogenous exacerbation of existing lesions rather than from fresh exogenous infection.

(4) *Breaking of contacts.* Where active tuberculosis develops in a person contact of that individual with non-infected persons should be broken wherever possible until the latter have developed tuberculin sensitivity either materially or, better still, by B.C.G. vaccination.

Practical Difficulties

There are, of course, enormous difficulties in carrying out such a programme, mainly because human nature often refuses to be regimented and personal objections arise and prevent the universal acceptance of the scheme. Furthermore there is at present neither the staff nor the money to put all these proposals into operation throughout the country, although by more accurate assessment of the prognosis of cases more economical use of the existing accommodation would be obtained, which in turn could do much to provide some of the financial support needed for better preventive methods. There is, however, no reason why a start should not be made by adopting some of the more simple procedures. The three age groups on which concentration is required are those under 5, the adolescent and young adult from 15–25, and the elderly male. Each group needs a special approach as the epidemiology of active disease varies in each case.

The Method of Attack

As a preliminary to the framing of our anti-tuberculosis campaign full recognition should be made of well established facts. These are:—

(1) That the uninfected individual is more susceptible to infection than the person who has already been infected and has recovered from the primary lesion.

(2) That the most important factors in determining the reaction to primary infection are the size of the dose, the age at which it occurs and the inherent native resistance of the body.

(3) That the reaction of the body to tuberculosis infection is determined by its ability to develop specific acquired resistance, a faculty which is dependent on race, nurture, standard of living, concurrent infections.

(4) Resistance to the disease can be increased by B.C.G. vaccination and, in the case of the infected, by adequate nourishment and a regulated

life which allows for sufficient rest and eliminates excessive strain and fatigue.

At present we are finding sources of infection and neglecting to protect those most at risk around that focus of infection. Not infrequently insufficient attention is paid to finding contacts of the infectious case or to using a newly discovered case as a means of tracing the other active cases from which the infection arose. Case finding by this method is never-ending work and requires much labour and patience, but it is an assault on the enemy's lines of communication. Another major fault in our present system is the neglect of an intensive search for the tubercle bacilli in cases simulating active tuberculosis. This neglect can easily result in wrong clinical assessment of cases and a waste of accommodation in providing unnecessary treatment. This could be overcome by insisting on at least three examinations for the bacillus by gastric lavage or laryngeal swab in every case that is negative by the usual smear method, with a further search for the bacilli in urine and faeces. If all these tests proved negative then there should be no need for the patient to occupy a tuberculosis bed for such treatment as may be prescribed. If we would standardise a high degree of search for the tubercle bacillus and then only notify and treat under the tuberculosis scheme such cases as had proved at some time to be positive, there would be a considerable clarification of the present position and release of a number of sanatorium beds. Needless to say, persistently negative cases would have to be under frequent domiciliary observation as suspects but they need not be labelled as tuberculous for public health purposes.

Conclusion

The eradication of tuberculosis depends on successful case finding, efficient treatment and protection of the healthy. The laboratory and the radiology department are the key to successful case finding, antibiotics, chemotherapeutic agents, if necessary combined with thoracic surgery, are the requirements for efficient treatment and vaccination, adequate nutrition and a good standard of living are essential to ensure protection of the healthy. With our limited resources we must not waste our available facilities. We should therefore direct our major effort of case finding to those age groups and those sections of the community where we know the largest number of cases are likely to be found, namely the infant, the young adult of both sexes and the elderly male. In treatment we should concentrate our main attention on the case that has a reasonable prospect of recovery and the one in which there is likely to be sufficient inherent resistance to hope for a response to antibiotics, chemotherapeutics or collapse therapy or all three. The healthy must be tuberculin tested—

particularly those known to be exposed to infection—and if necessary protected by vaccination. At the same time every effort must be made to control the infectious case living under conditions likely to cause massive infection of others. This can be done without taxing our nursing services, by segregating them in small comfortable hostels run under medical supervision and situated in an environment acceptable to these persons. Finally, both medical and lay persons need a revised educational programme based on recent developments in the study of the pathogenesis of tuberculosis. The real dangers and the predisposing causes of tuberculosis must be emphasised with a clear explanation of the degree of risk of contracting tuberculosis when certain conditions exist, particularly in contacts and members of tuberculous families. There must be greater appreciation of the need to attend to the raising of resistance rather than an unwarranted over-emphasis on dangers of exogenous infection. By these methods it will be possible even under present limitations to reduce morbidity and mortality and eventually bring our tuberculosis problems to minor proportions.

REFERENCES

[1]Heaf, F. Brit. Journ. Tuberc. 1941. XXXV. 130.
[2]Tubercle. 1948. XXIX. No. 1. 21.
[3]Wallgren, A. Tubercle. 1948. XXIX. No. 11. 245.

BIOGRAPHICAL NOTES

FREDERICK R. G. HEAF, M.A., M.D.(Cantab.), F.R.C.P.(Lond.), M.R.C.S.(Eng.).—David Davies Professor of Tuberculosis, Welsh National School of Medicine. Late Senior Medical Officer, London County Council. Adviser in Tuberculosis, Ministry of Health. Adviser in B.C.G. to Department of Health for Scotland. Honorary Consulting Physician, Papworth Village Settlement. President, British Tuberculosis Association. Member of the Special Committee of World Health Organisation on Tuberculin and B.C.G. Joint Author of *Recent Advances in Respiratory Tuberculosis* (J. & A. Churchill, 1947) and *Rehabilitating the Tuberculous* (Faber & Faber, 1945). Numerous articles in medical journals.

STEPHEN MOOSAI-MAHARAJ, B.A.(Hon.), M.R.S.T., M.P.H.(Michigan), Dip.Ed.(Cleveland).—Health Education Officer, Trinidad and Tobago. Formerly Vice-Principal, Naparima Teachers' College. Late Fellow, International Health Division of The Rockefeller Foundation. Member of the Royal Sanitary Institute. Member, American Public Health Association. Colony Representative at the Twelfth Pan-American Sanitary Conference and Second Pan-American Health Education Conference. Junior Red Cross Colony Organiser. Examiner in Hygiene, Department of Education, Trinidad and Tobago.

FILMS

THE MILKY WAY. 35 and 16 mm. Black and white. Sound. 35 mins. On free hire from United Dairies, Ltd., 34, Palace Court, W.2., who will also show the film themselves, using their own portable projector, to suitable audiences within the Greater London Area.

This film shows the production of milk under optimum conditions from the farm to the consumer, and a humorous element is introduced by the cantankerous customer who has no use for modern methods.

For the production of milk the best herds are required and they are most numerous in the West Country. Under conditions of scrupulous cleanliness, the cows are milked either by hand or automatically and the milk is taken to the depots. The pasteurising plant is shown both photographically and by means of diagrams. The work of control and central laboratories is explained as well as the necessity of sending samples to hospitals for the tubercle test. The cleanliness of the bottles receives attention and the housewife's part in rinsing bottles is emphasised. Finally, the difficult customer is converted and presents the milkman with clean shining bottles.

This is a very good film for showing to the general public, especially as it shows the need for their co-operation. It is well photographed and has an interesting commentary.

It can also be recommended to Agricultural and Domestic Science Colleges and to Pre-Nursing Courses.

L. E. H.

GROWING GIRLS. 1949. 16 and 35 mm. Black and white. Sound. 11 mins. Film Producers' Guild for Messrs. Southall, Ltd., Birmingham, with the co-operation of the National Committee for Visual Aids in Education. Director: Mrs. Winifred Holmes. For sale from the Educational Foundation for Visual Aids in Education, 33, Queen Anne Street, W.1. On free hire from Sound Services, Ltd., Guild House, Upper St. Martin's Lane, W.C.2.

The film aims at instructing girls of from 11 to 15 years of age in the physiology and hygiene of menstruation and at emphasising the normality of the process.

The story is woven around 13-year-old Mary and is introduced by showing her and her friend on the school playing field. Excellent photographic shots are used to show how all young creatures grow up—chickens, calves, tadpoles and humans.

Animated diagrams illustrate the physiology of menstruation and the development of the human foetus.

Photography is then used to demonstrate the hygiene of menstruation and the reasonable precautions necessary during a 'period'. A course is steered between two extremes of medical opinion.

Finally, when her 'period' is over, Mary plunges into the river full of *joie de vivre*.

This film is excellent in every respect, and can be recommended for its reticence without prudery and saneness in the midst of conflicting views. It could well be shown to all adolescents and would also be useful at later stages of education if it was introduced as being produced for girls of 11 to 15 years.

It has been sent to the Venice Film Festival as one of the best British Films of the year and has been awarded a first prize.

L. E. H.

BOOK REVIEWS

FACTORY WELL-BEING, by C. Conway Plumbe. (Sevenoaks Press Ltd. 1949. Pp. 138. Illus. Price 12s. 6d.)

Mr. Conway Plumbe, who has long and wide experience of industry as a factory inspector, makes the purpose of his book to survey those influences and devices that go to make a factory an acceptable place of human habitation. As a factory inspector he might have adopted the principle "Enforce the provisions of the Factories Act and its associated regulations and all will be well". But his experience has obviously led him to believe in the importance of some imponderable quality known as "works atmosphere" without which there can be no well being. But in any community it is essential to get the physical conditions such as the lighting, the heating and the ventilation of workrooms of the required standards. Bad physical conditions not only cause discontent but impair efficiency, and cause accidents and ill-health.

Technical experts—safety officers and medical officers, and an energetic progressive management can help to reach these standards but they can be more effective if there is a "democratic driving force" from the whole community which is allowed to express itself coherently through a health and safety committee, and probably democracy in industry is the key to good human relationships; it is quite possible to have a well appointed factory in which Factories Act standards are rigidly enforced by a paternalistic management and in which there is no team spirit, works atmosphere—call it what you will. Only some of the more important sections of the Factories Act are mentioned, not in detail, but in simple language coloured with the author's own experiences as a Factory Inspector.

"Human atmospheres" are more difficult to write about than the temperature, humidity and pollution of the atmosphere we breathe. The importance of goodwill from the directorate level is perhaps overstressed, but the real value of this book is that it brings these problems to light and that it is sufficiently short and simply written to be read by foremen and shop stewards as well as factory owners and those who have to know about Factories Acts. The democratic driving force which leads to factory well-being must come from the floor of the shop as well as the boardroom and here is a book which offers knowledge in palatable form to the rank and file.

R. S. F. SCHILLING.

JOURNAL FOR INDUSTRIAL NURSES, Vol. I, No. 2. June 1949. (Nuffield Department of Occupational Health, University of Manchester. Quarterly. Pp. 48. Price 8s. per annum from the University.)

This is a new Journal designed to meet the needs of industrial nurses and to quicken appreciation of the varied and interlocking problems of industrial health. It seeks to keep the nurse abreast of modern knowledge and techniques as these affect both her own practice and that of other workers engaged in promoting industrial health. Practice and education for this specialty cannot be divorced and both are still experimental. The Journal deals with both practice and preparation.

How often do practitioners bring their daily 'routines' to the bar of a critical assessment? Still less try to relate the daily problems of their individual job to the whole field and to the 'growing-points' of progress within it? It is refreshing, on looking through the table of contents, to find the eye travelling from an experiment in the education of industrial nurses' to the treatment of

coughs and colds, and the mind travelling backwards to consider the classical approach to accident prevention and forward to industrial health research.

We suspect that this Journal will not be wholly acceptable to the unco complacent and the unco serious. Of the former, those who hold that all factories are free from sepsis, that all propaganda causes change of habits, that all conferences are 'successful' and that the mortality of discussion groups is nil, it asks uncomfortable questions (though it is only fair to say that the publishing department is not itself exempt). The latter, on the other hand, although able to stomach its critical seriousness, might well be puzzled by a half-mocking lightness which haunts its editorial columns—a lightness vaguely reminiscent of the student-magazine. This however is of course what it really is—a Journal for student-practitioners written by student-practitioners, even though some are of professorial and magistral rank. The ironic Sanitas shares with Alice in Wonderland's philosophic animals the basic virtues of curiosity and criticism, as well as picking up the salty humours and sometimes the phraseology of the factory population.

On the whole, a Journal to be commended to the intelligent and the industrially sophisticated. Others will hardly understand it.

INDUSTRIAL NURSE.

THE NEW PUBLIC HEALTH, by Fred Grundy. (The Leagrave Press Ltd., Luton. 1949. Pp. 206. Illus. Price 10s. 6d.)

In putting forward *The New Public Health* as a successor to *The Handbook of Social Medicine*, Dr. Grundy points out that his new book deals mainly with the administrations . . . of "social medicine in practice", and that he has designed it primarily for health visitors, midwives, and social workers.

The contents cover all the main features of the administration of contemporary medicine, in theory and in practice. Space is also devoted to the important ancillary services which form such a vital part of social medicine—such services as are provided under the Education and Children's Acts. Vital statistics are dealt with, and a short philosophical section argues the background and justification for the basic concepts of social medicine. Other important subjects, such as Health Education, are outlined briefly.

Dr. Grundy has condensed into 200 pages a wealth of information which is new and interesting, and has managed a balanced study, which at this short distance from July 5th presents great difficulty. It is written in a lucid, simple and energetic style. This book will appeal to a much wider public than Dr. Grundy's modesty claims, and should be of value not only to the health visitors, but to doctors, councillors, and the general public who wish to understand more about the wider implications of the new Public Health.

JOHN BURTON.

PSYCHOLOGICAL ASPECTS OF CHILD CARE, by Agatha H. Bowley. (The University Press of Liverpool. 1949. Pp. 28. Price 1s.)

This small book presents the scaffolding on which a series of lectures by this well known authority was built, amplified sufficiently to provide a stimulating guide to understanding the problem of the child who lacks a good family background. The normal needs of the child at varying stages of development are outlined, the various causes of breakdown of the home analysed, and the resultant reactions of the child studied.

The relative merits of different methods of dealing with these unhappy children are discussed, along with some special behaviour difficulties in home, hostel or school.

The reading list included at the end helps towards the satisfaction of the interest and desire for more knowledge which this comprehensive book arouses.

A. BURGESS.

LIVING ANATOMY, by R. D. Lockhart. (Faber & Faber, Ltd. 1948. Pp. 71. Price 12s. 6d.)

This book is well named. It raises anatomy from the dead. Working with living models, both male and female, Professor Lockhart has prepared a series of 149 photographs that show the muscles in action. Technically the work is of the highest quality. The models are well posed and the photography and reproduction are excellent. Some of the shots are really beautiful; and all are clear and instructive.

A careful study of this book will give a new concept of muscle dynamics. It makes anatomy a study of function as well as of structure. It should be stimulating and helpful to all interested in the subject, whether as students or teachers, and whether from the point of view of physiology, medicine, physical education or art. Professor Lockhart is to be congratulated on the success of a project well conceived and, with the assistance of the student models and the photographer (Mr. Alexander Cain), well executed.

ROBERT SUTHERLAND.

YOUR BODY AND THE WAY IT WORKS, by Professor Winifred Cullis, C.B.E. Illustrated by Ian T. Morrison, D.A. (George Allen and Unwin Ltd. 1949. Pp. 32. Price, Library edn. 3s. 6d. net, School edn. 2s. 6d. non-net.)

From the somewhat pretentious title —*Understanding the Modern World*— of the series to which this little booklet belongs, one is perhaps led to expect rather more than one finds, which is a very elementary account of human physiology in 32 pages, more than half of this space being occupied with diagrams. This allocation is, however, well used, for the diagrams are striking and original and convey at least as much factual information as the text. Many of them will be useful to popular lecturers looking for illustrations to catch the attention of those not familiar with biological ideas. The text suffers much more from the extreme restriction of space, and obviously much has had to be omitted and the rest dealt with very briefly in a work of this length. The attractive presentation of what is covered will probably stimulate the reader to seek for other sources of information, and in this way the book will be valuable. It is not quite clear for what age group the book is intended. The section on "Things to do" at the end suggests that it is for a much more mature audience than the "Goodbye" which heads the last chapter.

D. H. SMYTH.

MODERN CONTRACEPTION, by Philip M. Bloom. (Delisle, 122 City Road, E.C.1. 1949. Pp. 54. Diags. Price 2s.)

This book should be useful to anyone wishing to obtain reliable information on this subject. It explains in simple language the various contraceptive methods in common use and gives a clear indication of the value and disadvantage of each method. The writer exposes the futility of some of the most frequently used methods of contraception.

The final chapter is on advice which should be given to newly married couples. There is much good in it, but also failure to stress the frequency of infertility. The assumption obtained from reading this chapter is that once a pregnancy is desired it can be attained. This is far from correct. Failure to conceive is a more distressing problem psychologically than frequent conception.

GLADYS H. DODDS.

DO you feel the need to learn more about how to teach health or how to see that it is taught? If so, would it not be a great help if you could spend two weeks discussing your problems with doctors, nurses, teachers, and social workers from all over the country? Particularly if you could do so under the continual guidance of experts of national authority?

IF you feel you would like to add to your knowledge and experience in this way, why not consider going to a summer school in health education? Perhaps the best would be the school held by the Central Council for Health Education. It will meet in St. Hugh's College, Oxford, from Monday the 14th to Monday the 28th August, 1950, inclusive, under the direction of Dr. Robert Sutherland. The school will be residential, and the cost will be 16 guineas.

IF you are interested, write for more information to the Medical Adviser and Secretary, The Central Council for Health Education, Tavistock House, Tavistock Square, London, W.C.1.

HEALTH EDUCATION JOURNAL

This quarterly Journal aims at helping the individual and the nation to a higher level of physical and mental health.

In its pages experts give interesting information about health and discuss the problems facing us and the best ways of giving people of all ages the health knowledge they need.

The Journal is meant to be stimulating and thought provoking and not merely a mirror of the official views of the Central Council for Health Education. Contributors are therefore encouraged to express their own opinions however controversial these may be.

ARTICLES

Readers are invited to submit articles on Health or Health Education. They should be not more than 2,000 words long. Contributions should be addressed to the Editor.

SUBSCRIPTION RATES

Single copy, 1/6, Post free, 1/7. Annual Subscription (4 issues), 6/- Post free. Orders to: The Medical Adviser and Secretary, Central Council for Health Education, Tavistock House, Tavistock Square, W.C.1. Tel. EUSton 3341.

Editor: Robert Sutherland, M.D., D.P.H.

PRINTED IN GREAT BRITAIN BY FISHER, KNIGHT & CO., LTD., ST. ALBANS